

Review Notes for the RADIOGRAPHY EXAM

APPLETON

PATIENT CARE



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Appleton

Chapter 1: Patient Care (150 Q & Ans.)

1. The legal doctrine res ipsa loquitur means which of the following?
- (A) Let the master answer.
 - (B) The thing speaks for itself.
 - (C) A thing or matter settled by justice.
 - (D) A matter settled by precedent.

The legal doctrine;

- Res ipsa loquitur relates to a thing or matter that speaks for itself.
 - For instance, if a patient went into the hospital to have a kidney stone removed and ended up with an appendectomy, that speaks for itself, and negligence can be proven.
- Respondent superior is the phrase meaning "let the master answer" or "the one ruling is responsible."
 - If a radiographer was negligent, there may be an attempt to prove that the radiologist was responsible, because the radiologist oversees the radiographer.
- Res judicata means a thing or matter settled by justice.
- Stare decisis refers to a matter settled by precedent.

(Gurley & Callaway, p 194)

Ans B

2. When reviewing patient blood chemistry levels, what is considered the normal creatinine range?
- (A) 0.6 to 1.5 mg/100 mL
 - (B) 4.5 to 6 mg/100 mL
 - (C) 8 to 25 mg/100 mL
 - (D) Up to 50 mg/100 mL

- Creatinine is a normal alkaline constituent of urine and blood, but increased quantities of creatinine are present in advanced stages of renal disease.
- Creatinine and BUN blood chemistry levels should be checked prior to beginning an intravenous pyelogram.

- Increased levels may forecast an increased possibility of contrast-media induced renal effects and poor visualization of the renal collecting systems.
 - The normal Creatinine range is 0.6 to 1.5 mg/100 mL.
 - The normal BUN range is 8 to 25 mg/100 mL.

(Ballinger & Frank, vol 2, p 126)

Ans. A

3. The condition of slow heart rate, below 60 beats per minute (bpm), is termed
- (A) hyperthermia.
 - (B) hypotension.
 - (C) hypoxia.
 - (D) bradycardia.

- ❖ The condition in which a patient's heart rate slows to below 60 bpm is Bradycardia.
- ❖ Hyperthermia is the condition in which the patient's temperature is well above the normal average range (97.7 to 99.5°F).
- ❖ Hypotension occurs if the blood pressure drops below the normal ranges (110 to 140/60 to).
- ❖ Hypoxia is a condition in which there is decreased oxygen supply to body tissues.

(Adler & Carlton, p 181)

Ans. D

4. During a grand mal seizure, the patient should be
- (A) protected from injury.
 - (B) placed in a semiupright position to prevent aspiration of vomitus.
 - (C) allowed to thrash freely.
 - (D) given a sedative to reduce jerky body movements and reduce the possibility of injury.

When a patient is experiencing a seizure, he or she should be protected from striking any hard surfaces or falling. The patient exhibits uncontrollable body movements. Any attempt to place the patient in a

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semierect position or to administer a sedative would prove futile.

Following the seizure, *it is important to place the patient on his or her side (to prevent aspiration of any vomitus or oral secretions).*

(Torres, p 167)

Ans. A

5. Diseases whose *mode of transmission* is through the *air* include

1. tuberculosis.
2. mumps.
3. rubella.

(A) 1 only

(B) 1 and 2 only

(C) 1 and 3 only

(D) 1, 2, and 3

-
- Diseases that are *transmitted through the air* include *TB, rubella ("German measles"), mumps, and influenza.*

- ❖ Airborne precautions require the *patient to wear a mask* to avoid the spread of acid-fast bacilli (in the bronchial secretions of TB patients) or other pathogens during coughing.

- If the patient is unable or unwilling to wear a mask, the radiographer must wear one.

- The radiographer should wear gloves, but a gown is required only if flagrant contamination is likely.

- Patients infected with diseases calling for *airborne precautions* require a *private, specially ventilated (negative-pressure) room.*

- ❖ A private room is also indicated for all patients on *droplet precautions*, i.e., with diseases that are transmitted via large droplets expelled from the patient while speaking, sneezing, or coughing.

- The pathogenic droplets can infect others when they come in contact with the mouth or nasal mucosa or conjunctiva.

- *Rubella* ("German measles"), *mumps*, and *influenza* are among the diseases spread by droplet contact; a *private room* is required for the patient, and health-care practitioners must use gown and gloves.

(Adler & Carlton, p 115)

Ans. D

6. You have encountered a person who is apparently unconscious. Although you open his airway, *there is no rise and fall of the chest*, and *you can hear no breath sounds*. You should

(A) *begin mouth-to-mouth rescue breathing, giving two full breaths.*

(B) proceed with the Heimlich maneuver.

(C) begin external chest compressions at a rate of 80 to 100 per minute.

(D) begin external chest compressions at a rate of at least 100 per minute.

The victim's airway should first be opened.

This is accomplished by tilting back the head and lifting the chin.

However, if the victim may have suffered a spinal cord injury, the spine should not be moved and the airway should be opened using the jaw-thrust method.

The rescuer next listens for breathing sounds and *watches for the rise and fall of the chest to indicate breathing.*

If there is no breathing, the rescuer pinches the victim's nose and delivers two full breaths via mouth-to-mouth rescue breathing.

If rise and fall of the chest is still not present, the Heimlich maneuver is instituted. If ventilation does not take place during the two full breaths, the victim's circulation is checked next (using the carotid artery).

If there is no pulse, external chest compressions are begun at a rate of 80 to 100/min for adults and at least

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100/min for infants.
(Taber's, pp 1868-1869)
Ans. A

7. To reduce the back strain *associated with transferring patients* from stretcher to x-ray table, the radiographer should
(A) *pull the patient.*
(B) push the patient.
(C) hold the patient away from his or her body and lift.
(D) bend at the waist and pull.

- When *transferring patients from stretcher* to x-ray table, there are several rules that will *reduce back strain*.
 - *Pull, do not push*, the patient; pushing increases friction and makes the transfer more difficult.
 - Do not bend at the waist and pull; use your biceps for pulling the patient.
 - Draw the patient as close to you as possible and then lift if necessary.

(Torres, p 74)

Ans. A

8. The *least toxic* contrast medium listed below is
(A) *barium sulfate.*
(B) metrizamide.
(C) ethiodized oil.
(D) meglumine diatrizoate.

- The inert characteristics of *barium sulfate* render it the *least toxic contrast medium*.
- *Iodinated* contrast media are absorbed by the body, (*whereas barium sulfate is not*).
- *Metrizamide, ethiodized oil, and meglumine diatrizoate* are iodinated contrast media that could cause *anaphylactic shock* and *death in the allergic patient*.

(Torres, p 200)

Ans. A

9. An *esophagogram* might be requested

for patients with *which of the following esophageal disorders/symptoms?*

1. *Varices*
2. *Achalasia*
3. Dysphasia

(A) 1 only

(B) *1 and 2 only*

(C) 1 and 3 only

(D) 1, 2, and 3

1.) *Dilated twisted veins (Varices)*, of the *esophagus are frequently associated with obstructive liver disease or cirrhosis of the liver*.

- These esophageal veins enlarge and can rupture, causing serious hemorrhage.

2.) *Achalasia* is dilation of the *esophagus as a result of the cardiac sphincter's failure to relax and allow food to pass into the stomach*.

3.) *Dysphagia* refers to *difficulty swallowing* and is the *most common esophageal complaint*.

4.) *Hiatal hernia* is *another common esophageal problem*; it is characterized by protrusion of a portion of the stomach through the cardiac sphincter.

- It is a common condition, and many individuals with the condition are asymptomatic.
- Each of these conditions of the esophagus may be evaluated with an esophagogram.
- Positions usually include the posteroanterior, right anterior oblique, and right lateral.

❖ *Dysphasia* is a *speech impairment resulting from a brain lesion*; it is unrelated to the esophagus.

(Linn-Watson, pp 102, 107)

Ans. B

10. Which of the following *diastolic pressure* readings might indicate *hypertension*?

- (A) 50 mmHg
- (B) 70 mmHg
- (C) 90 mmHg
- (D) *110 mmHg*

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- ❖ The **diastolic** number is the bottom number in a blood pressure reading.
 - The normal range for diastolic pressure is **60** to **90** mmHg.
- A **diastolic pressure** reading of **110** mmHg might indicate Hypertension.
- A **diastolic pressure** of **50** mmHg might indicate shock.
- ❖ The **systolic** number is the top number in a blood pressure reading.
 - The normal systolic pressure range is **110** to **140** mmHg.

(Torres, p 139)

Ans. D

11. All of the following statements regarding **osteoarthritis** are true except

- (A) Osteoarthritis is a progressive disorder.
- (B) **Osteoarthritis is an inflammatory disorder.**
- (C) Osteoarthritis involves deterioration of the articular cartilage.
- (D) Osteoarthritis involves the formation of bony spurs.

- ❖ **Osteoarthritis** is a progressive degenerative joint disorder characterized by deterioration of the articular cartilage.

- Once the subchondral bone is exposed, friction between adjacent bone occurs, and new bone formation begins.
- This bone tissue forms spurs, which get progressively larger and function to decrease joint space and restrict movement.
- **Osteoarthritis** is a noninflammatory disorder.
- **Rheumatoid arthritis** is an inflammatory disorder.

(Tortora & Grabowski, p 267)

Ans. B

12. Abnormal accumulation of air in pulmonary tissues, resulting in overdistention of the alveolar spaces, is

- (A) **emphysema.**
- (B) empyema.

- (C) pneumothorax.
- (D) pneumoconiosis.

- Overdistention of the alveoli with air is **emphysema**.
- The condition is often a result of many years of smoking and is characterized by dyspnea, especially when recumbent.
- **Empyema** is pus in the thoracic cavity;
- **Pneumothorax** is air or gas in the pleural cavity.
- **Pneumoconiosis** is a condition of the lungs characterized by particulate matter having been deposited in lung tissue; it sometimes results in Emphysema.

(Tortora & Grabowski, p 844)

Ans. A

13. In which of the following situations should a radiographer wear protective eye gear (goggles)?

- 1. When performing an upper gastrointestinal radiography examination
- 2. **When assisting the radiologist during an angiogram**
- 3. **When assisting the radiologist in a biopsy / aspiration procedure**

(A) 1 and 2 only

(B) 1 and 3 only

(C) **2 and 3 only**

(D) 1, 2, and 3

- ❖ It is recommended that a radiographer wear protective eye gear (goggles) during any procedure in which there might be splattering of blood or body fluids.

- This includes both **angiography** and **biopsy / aspiration procedures**.
- This would not be expected during a routine upper gastrointestinal examination.

(Torres, p 57)

Ans. C

14. Possible side effects of an iodinated

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contrast medium that is administered intravenously include all of the following except

- (A) a warm feeling.
- (B) altered taste.
- (C) nausea.
- (D) hypotension.

Nonionic, low-osmolality iodinated contrast agents are associated with far fewer side effects and reactions than ionic, higher-osmolality contrast agents.

A side effect is an effect that is unintended but possibly expected and fundamentally not harmful.

An adverse reaction is a harmful unintended effect.

Possible side effects of iodinated contrast agents include

- 1.) a warm, flushed feeling,
- 2.) a metallic taste in the mouth,
- 3.) a nausea, headache,
- 4.) a pain at the injection site.

Adverse reactions include a.) itching, b.) anxiety, c.) rash or hives, d.) vomiting, e.) sneezing,

f.) dyspnea

and g.) hypotension.

(Adler & Carlton, p 328)

Ans. D

15. A diabetic patient who is prepared for a fasting radiographic exam is susceptible to a hypoglycemic reaction. This is characterized by

- 1. shaking and nervousness.
- 2. cold, clammy skin.
- 3. cyanosis

(A) 1 only

(B) 2 only

(C) 1 and 2 only

(D) 1, 2, and 3

❖ Hypoglycemic reactions can be very severe and should be treated with an immediate dose of sugar (e.g., in juice).

o Early symptoms of an insulin reaction are a.) shaking, b.) nervousness, c.) dizziness,

d.) cold and clammy skin, e.) blurred vision, and f.) slurred speech.

❖ Convulsions and coma may result if the patient is not treated.

❖ Cyanosis is the lack of oxygenated blood, which is a symptom of shock.

(Torres, p 158)

Ans. C

16. Nitroglycerin is used

(A) to relieve pain from angina pectoris.

(B) to prevent a heart attack.

(C) as a vasoconstrictor.

(D) to increase blood pressure.

❖ Angina pectoris is a crushing chest pain caused by a circulatory disturbance of the coronary arteries.

o Nitroglycerin is used to dilate blood vessels (vasodilation) and decrease blood pressure in the treatment of pain from angina pectoris.

o Nitroglycerin is usually given sublingually, and thus is absorbed directly into the bloodstream.

(Adler & Carlton, p 292)

Ans. A

17. In reviewing a patient's blood chemistry, which of the following blood urea nitrogen (BUN) ranges is considered normal?

(A) 0.6 to 1.5 mg/100 mL

(B) 4.5 to 6 mg/100 mL

(C) 8 to 25 mg/100 mL

(D) Up to 50 mg/100 mL

• The BUN level indicates the quantity of nitrogen in the blood in the form of urea.

o The normal concentration is 8 to 25 mg/100 mL.

❖ BUN and creatinine blood chemistry

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levels should be checked prior to beginning an intravenous pyelogram.

- An increase in the BUN level often indicates decreased renal function.
- Increased BUN and/or creatinine levels may forecast an increased possibility of contrast media-induced renal effects and poor visualization of the renal collecting systems.
- The normal **creatinine** range is 0.6 to 1.5 mg/mL.

(Ballinger & Frank, vol 2, p 176)

Ans. C

18. Which of the following may be used to effectively reduce the viscosity of contrast media?

- (A) **Warming**
- (B) Refrigeration
- (C) Storage at normal room temperature
- (D) Storage in a cool, dry place

❖ **Iodinated** contrast material can become somewhat viscous (**thick and sticky**) at normal room temperatures.

- This makes injection much more difficult.
- ❖ **Warming** the contrast medium **to body temperature serves to reduce viscosity**.
- This may be achieved by placing the vial in warm water or putting it into a special warming oven.

(Adler & Carlton, p 322)

Ans. A

19. Which of the following is a **violation** of correct sterile techniques?

- (A) Gowns are considered sterile in the front down to the waist, including the arms.
- (B) Sterile gloves must be kept above the waist level.
- (C) **Persons in sterile dress should pass each other face to face.**
- (D) A sterile field should not be left

unattended.

1) **Persons in sterile dress should not pass each other face to face.**

- Rather, they should pass each other back to back, to avoid contaminating each other.

2) **Gowns are considered sterile in the front down to the waist, including the arms.**

3) **Sterile gloves must be kept above the waist level.**

- If the hands are accidentally lowered or placed behind the back, they are no longer sterile.

4) **A sterile field should not be left unattended.**

- Sterile fields should be set up immediately prior to a procedure, and should be covered with a sterile drape if a few moments are to elapse before the procedure can begin.

5) **A sterile field should be constantly monitored** to be certain that it has not been contaminated.

(Adler & Carlton, p 234)

Ans. C

20. While performing mobile radiography on a patient, you note that the requisition is for a chest film to check placement of a Swan-Ganz catheter. A **Swan-Ganz catheter** is a(n)

- (A) pacemaker.
- (B) chest tube.
- (C) **intravenous catheter.**
- (D) urinary catheter.

• A **Swan-Ganz catheter** is a specific type of intravenous catheter used to measure the pumping ability of the heart, to obtain pressure readings, and to introduce medications and intravenous fluids.

• A **pacemaker** is a **device** that is inserted under the patient's skin to **regulate heart rate**.

- Pacemakers may be permanent or temporary.

• **Chest tubes** are used to remove fluid

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or air from the pleural cavity.

- Any of these items may be identified on a chest radiograph, provided the cassette is properly positioned and the correct exposure factors are employed.
- If the physician is interested in assessing the proper placement of a **Swan-Ganz catheter**, the lungs may have to be slightly overexposed in order to clearly delineate the proper placement of the tip of the Swan-Ganz catheter, which will overlap the denser cardiac silhouette.
- A **urinary catheter** will not appear on a chest radiograph.

(Adler & Carlton, p 246)

Ans. C

21. **Sterile technique** is required when contrast agents are administered

- (A) rectally.
- (B) orally.
- (C) **intrathecally.**
- (D) through a nasogastric tube.

- **Sterile technique** is required for the administration of contrast media by the **intravenous** and **intrathecal** (intraspinal) methods.
 - Sterile technique is also required for injection of contrast media during arthrography.
- **Aseptic technique** is used for administration of contrast media by means of the **oral** and **rectal routes**, as well as through the nasogastric tube.

(Torres, p 246)

Ans. C

22. An **ambulatory patient** is one who

- (A) **is able to walk.**
- (B) is unable to walk.
- (C) has difficulty breathing.
- (D) arrives by ambulance.

❖ An **Ambulatory patient is one who is able to walk** with minimal or no assistance.

- Outpatients are usually

ambulatory, as are many inpatients.

- Patients who are not ambulatory are usually transported to the radiology department via stretcher.

(Adler & Carlton, p 161)

Ans. A

23. The medical term for **nosebleed** is

- (A) vertigo.
- (B) **epistaxis.**
- (C) urticaria.
- (D) aura.

- The medical term for **nosebleed** is **Epistaxis.**
- **Vertigo** refers to a feeling of "**whirling**" or a sensation that the room is spinning.
 - Some possible causes of vertigo include inner ear infection and acoustic neuroma.
- **Urticaria** is a vascular reaction **resulting in dilated capillaries** and **edema** and **causing the patient to break out in hives.**
- An **Aura** may be classified as either a feeling or a motor response (such as flashing lights, tasting metal, smelling coffee) that **precedes an episode such as a seizure or a migraine headache.**

(Adler & Carlton, p 274)

Ans. B

24. Which of the following must be included in the **patient's medical record or chart**?

1. **Diagnostic and therapeutic orders**
2. **Medical history**
3. **Informed consent**

- (A) 1 and 2 only
- (B) 1 and 3 only
- (C) 2 and 3 only
- (D) **1, 2, and 3**

- The **Joint Commission on the Accreditation of Healthcare Organizations** (JCAHO) is the organization that accredits health-

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care organizations in the United States.

- ❖ The **JCAHO** sets forth certain standards for medical records.
- In keeping with those standards, all diagnostic and therapeutic orders must appear on the **patient's medical record or chart**.
- Additionally, **patient identification information, medical history, consent forms** and any **diagnostic and therapeutic reports** should also be part of the patient's permanent record.
- The patient's chart is a means of communication between various health-care providers.

(Torres, p 14)

Ans. D

25. **Chemical substances** that are used to kill pathogenic bacteria are called

1. antiseptics.
2. **germicides**.
3. **disinfectants**.

(A) 1 only

(B) 1 and 2 only

(C) 2 and 3 only

(D) 1, 2, and 3

Some **chemical agents** used in health-care facilities function **to kill pathogenic microorganisms**, while others function to inhibit the growth / spread of pathogenic microorganisms.

- **Germicides** and **disinfectants** are used to kill pathogenic microorganisms, whereas
- **Antiseptics** (like alcohol) are used to stop their growth / spread.
- **Sterilization** is another associated term; it refers to the killing of all microorganisms and their spores.

(Ballinger & Frank, vol 1, p 15)

Ans. C

26. A **small bottle containing a single dose of medication** is termed

(A) an ampule.

(B) a vial.

(C) a bolus.

(D) a carafe.

- ❖ Injectable medications are available in **two different kinds of containers**;

1) An **ampule** is a small container that usually holds a single dose of medication.

2) A **vial** is a larger container that holds several doses of the medication.

- ❖ The term **bolus** is used to describe an amount of fluid to be injected.

- ❖ A **carafe** is a narrow-mouthed container; it is not likely to be used for medical purposes.

(Adler & Carlton, pp 294-295)

Ans. A

27. **Forms of intentional misconduct** include

1. **slander**.
2. **invasion of privacy**.
3. negligence.

(A) 1 only

(B) 2 only

(C) 1 and 2 only

(D) 1, 2, and 3

- **Verbal defamation** of another, or **slander**, is a type of intentional misconduct.

- **Invasion of privacy** (that is, public discussion of privileged and confidential information) is intentional misconduct.

- ❖ However, if a radiographer leaves a weak patient standing alone in order to check films or get supplies, and that patient falls and sustains an injury, that would be considered unintentional misconduct or **negligence**.

(Saia, p 8)

Ans. C

28. **Instruments required to assess vital signs** include;

1. **a thermometer**.
2. a tongue blade.
3. **a watch with a second hand**.

(A) 1 only

(B) 1 and 2 only

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(C) 1 and 3 only

(D) 1, 2, and 3

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- ❖ The four vital signs are temperature, pulse, respiration, and blood pressure.
 - Because radiographers may be required to take vital signs in an emergency, they should practice these skills.
 - A thermometer is required to take the patient's temperature.
 - A watch with a second hand is required to take the patient's pulse and respiration.
 - To measure blood pressure, a blood pressure cuff, sphygmomanometer, and stethoscope are required.
 - ❖ This is the skill that the radiographer should practice most frequently, as it is the one most likely to be needed in an emergency situation.
 - A tongue blade is used to depress the tongue for inspection of the throat and is not used in vital sign assessment.

(Torres, p 128)

Ans. C

29. An inanimate object that has been in contact with an infectious microorganism is termed a
- (A) vector.
 - (B) fomite.
 - (C) host.
 - (D) reservoir.

-
- A fomite is an inanimate object that has been in contact with an infectious microorganism.
 - A reservoir is a site where an infectious organism can remain alive and from which transmission can occur.
 - ❖ Although an inanimate object can be a reservoir for infection, living objects (such as humans) can also be reservoirs.
 - For infection to spread, there must be a host environment.
 - ❖ Although an inanimate object may

serve as a temporary host where microbes can grow, microbes flourish on and in the human host, where there are plenty of body fluids and tissues to nourish and feed the microbes.

- A vector is an animal host of an infectious organism that transmits the infection via bite or sting.

(Torres, p 46)

Ans. B

30. What type of precautions prevents the spread of infectious agents in aerosol form?

- (A) Strict isolation
- (B) Protective isolation
- (C) Airborne precautions
- (D) Contact precautions

Category-specific isolations have been replaced by transmission-based precautions: airborne, droplet, and contact.

Under these guidelines, some conditions or diseases can fall into more than one category.

- ❖ Airborne precautions are employed with patients suspected or known to be infected with the tubercle bacillus (TB), chickenpox (varicella), or measles (rubeola).
 - Airborne precautions require that the patient wear a mask to avoid the spread of bronchial secretions or other pathogens during coughing.
- If the patient is unable or unwilling to wear a mask, the radiographer must wear one.
 - The radiographer should wear gloves, but a gown is required only if flagrant contamination is likely.
 - Patients under airborne precautions require a private, specially ventilated (negative-pressure) room.
- ❖ A private room is also indicated for all patients on droplet precautions, i.e., with diseases transmitted via

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large droplets expelled from the patient while speaking, sneezing, or coughing.

- The pathogenic droplets can infect others when they come in contact with mouth or nasal mucosa or conjunctiva.
- *Rubella* ("German measles"), *mumps*, and *influenza* are among the diseases spread by **droplet contact**; a private room is required for the patient, and health-care practitioners should use gown and gloves.
- ❖ **Contact precautions** require a private patient room and the use of gloves, mask, and gown for anyone coming in direct contact with the infected individual or his or her environment.
- Any diseases spread by direct or close contact, such as **MRSA** (*methicillin-resistant Staphylococcus aureus*), *conjunctivitis*, and *hepatitis A*, require **contact precautions**.

(Adler & Carlton, p 215)

Ans. C

31. The complete **killing of all microorganisms** is termed

- (A) surgical asepsis.
- (B) medical asepsis.
- (C) **sterilization**.
- (D) disinfection.

a. The complete **killing of all Microorganisms** is termed **sterilization**.

b. **Surgical asepsis** refers to the **technique used to prevent contamination when performing procedures**.

c. **Medical asepsis** refers to **practices that reduce the spread of microbes**, and therefore the chance of spreading disease or infection.

- Handwashing is an example of medical asepsis. It reduces the spread of infection, but does not eliminate all microorganisms.

d. **Disinfection** involves the **use of chemicals to either inactivate or inhibit the growth of microbes**.

(Adler & Carlton, p 200)

Ans. C

32. **Anaphylactic shock** manifests early symptoms that include

- 1. **dysphagia**.
- 2. **itching of palms and soles**.
- 3. **constriction of the throat**.

(A) 1 only

(B) 2 only

(C) 2 and 3 only

(D) **1, 2, and 3**

❖ **Adverse reactions** to the intravascular administration of iodinated contrast are not uncommon, and although the risk of a life-threatening reaction is relatively low, the radiographer must be alert to recognize the situation and deal with it effectively should a serious reaction occur.

- A **minor reaction** is characterized by **flushed appearance** and **nausea**, and occasionally by **vomiting** and **a few hives**.

- **Early symptoms** of a possible anaphylactic reaction include **constriction of the throat**, possibly because of laryngeal edema, **dysphagia** (**difficulty swallowing**), and **itching of the palms and soles**.

❖ The radiographer must maintain the patient's airway, summon the radiologist, and call a "code."

(Adler & Carlton, p 267)

Ans. D

33. The usual patient **preparation for an upper GI exam** is

(A) **NPO 8 h before the exam**.

(B) light breakfast only on the morning of the exam.

(C) clear fluids only on the morning of the exam.

(D) 2 oz castor oil and enemas until clear.

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- ❖ In order to obtain a diagnostic examination of the stomach, it must first be empty.
 - The usual preparation is **NPO** (nothing by mouth) after midnight (approximately **8 hrs.** before the exam).
 - Any material in the stomach can simulate the appearance of disease.

(Torres, p 211)

Ans. A

34. A drug's **chemical** name is called its

(A) **generic name.**

(B) trade name.

(C) brand name.

(D) proprietary name.

-
- A drug's **generic name** identifies its **chemical** family.
 - ❖ A particular generic drug can be manufactured by several different companies and be given different **trade names** (*brand or proprietary names*).
 - For example, the drug with the chemical / generic name **acetaminophen** is known by the trade or brand name **Tylenol**.
 - Drugs can be classified by either their generic name or their trade name.

(Ehrlich et al, p 184)

Ans. A

35. A patient whose **systolic blood** pressure is less than **90** mmHg is usually considered

(A) hypertensive.

(B) **hypotensive.**

(C) average / normal.

(D) baseline.

-
- **Systolic blood pressure** describes the pressure during **contraction** of the heart. It is expressed as the top number when recording blood pressure.
 - **Diastolic blood pressure** is the

reading during **relaxation** of the heart and is placed on the bottom when recording blood pressure.

- ❖ A patient is considered **hypertensive** when **systolic pressure** is consistently above **140** mmHg, and **hypotensive** when the **systolic pressure** is lower than **90** mmHg.

(Adler & Carlton, p 181)

Ans. B

36. In what order should the following exams be performed?

1. Upper GI

2. Intravenous pyelogram (IVP)

3. Barium enema

(A) 3, 1, 2

(B) 1, 3, 2

(C) 2, 1, 3

(D) **2, 3, 1**

When scheduling patient examinations, it is important to avoid the possibility of residual contrast medium covering areas that will be of interest on later examinations.

The **IVP** should be scheduled **first** because the contrast medium used is excreted rapidly.

The **barium enema** should be scheduled **next**. Finally, the **upper GI** is scheduled.

There should not be enough barium remaining from the previous BE to interfere with the examination of the stomach or duodenum, although a preliminary scout film should be taken in each case.

(Torres, p 212)

Ans. D

37. You receive a patient who is complaining of pain in the area of the left fourth and fifth metatarsals; however, the requisition asks for a **left ankle exam**. What should you do?

(A) Perform a left foot exam.

(B) Perform a left ankle exam.

(C) Perform both a left foot and a left ankle exam.

(D) **Check with the referring**

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physician.

Although it is never the responsibility of the radiographer to diagnose, it is the responsibility of every radiographer to be alert.

The patient should not be subjected to unnecessary radiation from an unwanted exam.

Rather, it is the radiographer's responsibility to *check with the referring physician* and *report the patient's complaint*.

(Ehrlich & McCloskey, p 14)

Ans. D

38. All of the following statements regarding handwashing and skin care are correct except

(A) Hands should be washed after each patient examination.

(B) Faucets should be opened and closed with paper towels.

(C) Hands should be smooth and free from chapping.

(D) Any cracks or abrasions should be left uncovered to facilitate healing.

- ❖ In the practice of aseptic technique, *handwashing* is the most important precaution.

○ The radiographer's *hands should be thoroughly washed* with warm, soapy running water *after each patient examination*.

○ To avoid contamination of, or contamination by, the faucets, they should be opened and closed using paper towels.

○ Care should be taken to avoid chapped hands by the use of hand cream.

○ Skin function is a major factor in protecting bodies from the invasion of bacteria and infection.

- ❖ *Any cuts, abrasions*, or other breaks in the continuity of this protective

barrier *should be protected from bacterial invasion with a bandage.*

(Torres, p 54)

Ans. D

39. Which of the following body fluids is (are) potential carrier(s) of *HIV*?

1. *Semen*

2. *Vaginal secretions*

3. *Blood*

(A) 1 only

(B) 1 and 3 only

(C) 2 and 3 only

(D) 1, 2, and 3

- ❖ Blood and all other body fluids are carriers of *HIV* in infected individuals. Standard precautions are taken to avoid contact with any blood or body fluids.

○ However, *HIV cannot be transmitted via inanimate objects*, such as drinking fountains and glassware.

(Torres, p 51)

Ans. D

40. Which of the following *legal phrases* defines a circumstance in which both the health-care provider's and the patient's actions *contributed to an injurious outcome*?

(A) Intentional misconduct

(B) Contributory negligence

(C) Gross negligence

(D) None of the above

A circumstance in which both the health-care provider's and the patient's *actions contribute to an injurious outcome* is termed *contributory negligence*.

An *example* would be a patient who fails to follow the physician's orders or show up for follow-up care, and then sues when the condition causes permanent damage.

Another example would be a patient who deliberately gives false information about the ingestion of drugs, leading to adverse effects from medications

administered.

Most states do not completely dismiss injury if there has been negligence on the part of the health-care institution, even if the patient's actions contributed substantially to the injury.

Rather, comparative negligence is applied, with the percentage of the injury due to the patient's actions is compared with the total amount of injury.

A jury may decide that a doctor was negligent in his actions, but because the patient lied about using an illegal street drug that *contributed to the injurious outcome*, the patient is 80 percent responsible for her condition.

The party suing may be awarded \$100,000 for injuries, but would actually receive only \$20,000.

- ❖ *Gross negligence* occurs when there is willful or deliberate neglect of the patient.

- ❖ *Assault, battery, invasion of privacy, false imprisonment, and defamation* of character all fall under the category of *intentional misconduct*.

(Ehrlich, McCloskey, & Daly, p 57)

Ans. B

41. *Log rolling* is a method of moving patients with suspected

- (A) head injury.
- (B) *spinal injury*.
- (C) bowel obstruction.
- (D) extremity fracture.

Patients arriving from the emergency department (ED) with suspected *spinal injury* should not be moved.

AP and horizontal lateral projections of the suspected area should be evaluated and a decision made about the advisability of further films.

For a lateral projection, the patient should be moved along one plane, that is, rolled like a log. It is imperative that twisting motions be avoided.

(Torres, pp 78-79)

Ans. B

42. A patient in a *recumbent position with the head lower than the feet* is said to be in which of the following positions?

- (A) *Trendelenburg*
- (B) Fowler's
- (C) Sims
- (D) Stenver's

- The patient is said to be in the *Trendelenburg position* when the *head is positioned lower than the feet*.

- This position is helpful in several radiographic procedures, such as separating redundant bowel loops and demonstration of hiatal hernias.

- It is also used in treating shock.

- In *Fowler's position*, the *head is higher than the feet*.

- The *Sims position* is the left posterior oblique (LPO) position with the right leg flexed up for insertion of the enema tip.

- *Stenver's* is a radiographic position for mastoids.

(Taber's, p 2234)

Ans. A

43. An *informed consent* is required *before performing which of the following exams?*

- (A) Upper GI
- (B) Lower GI
- (C) Sialogram
- (D) *Renal arteriogram*

Informed consent is *required before any examination that involves* greater-than-usual risk.

Routine procedures such as *sialography* and *upper* and *lower GI series* are examples of lower-risk procedures, for which the consent given on admission to the hospital is sufficient.

(Adler & Carlton, p 366)

Ans. D

44. Blood pressure may be expressed as 120/95. What does *95* represent?

- 1. *The phase of relaxation of the*

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cardiac muscle tissue

2. The phase of contraction of the cardiac muscle tissue
3. *A higher-than-average diastolic pressure*

- (A) 1 only
(B) 2 only
(C) *1 and 3 only*
(D) 2 and 3 only

-
- ❖ The normal blood pressure range for men and women is *110 to 140* mmHg systolic reading (top number) and *60 to 80* mmHg diastolic reading (bottom number).
 - *Systolic pressure* is the contraction phase of the left ventricle.
 - *Diastolic pressure* is the relaxation phase in the heart cycle.

(Torres, p 139)
Ans. C

45. For which of the following radiographic examinations is a consent form usually required?

1. *Angiogram*
2. GI series
3. Skeletal survey

- (A) 1 only
(B) 1 and 2 only
(C) 1 and 3 only
(D) 1, 2, and 3

Although patient consent for all routine procedures is implied upon admission to the hospital, specific *informed consent forms* are required for procedures that involve significant risk.

Routine procedures such as *GI series* and *skeletal surveys* do not involve significant patient risk, but invasive procedures such as *angiography* do, and therefore a consent form must be signed for such procedures.

A family member may sign for a patient who is incompetent or too ill to sign.

(Ehrlich et al, p 125)
Ans. A

46. *Increased pain threshold*, breakdown of skin, and *atrophy of fat pads* and sweat glands are all important considerations when working with which group of patients?

- (A) Infants
(B) Children
(C) Adolescents
(D) *Geriatric patients*

Increased pain threshold, breakdown of skin, and atrophy of fat pads and sweat glands are all important considerations when working with *Geriatric patients*.

Many changes occur as our bodies age.

Although muscle is replaced with fat, the amount of subcutaneous fat is decreased, and the skin atrophies.

Therefore, the geriatric patient requires *extra-gentle treatment*.

A mattress pad should always be placed on the radiographic table to help prevent *skin injury* or abrasions.

If tape is required, paper tape should be used instead of adhesive.

Geriatric patients are also more sensitive to *hypothermia* because of breakdown of the sweat glands and should always be kept covered, both to preserve modesty and for extra warmth.

Loss of sensation in the skin increases pain tolerance, and so the geriatric patient may not be aware of excessive stress on bony prominences like the elbow, wrist, coccyx, and ankles.

(Dowd & Wilson, vol 2, p 1026)

Ans. D

47. The *advantages* of using nonionic, water-soluble contrast media include

1. cost-containment benefits.
2. *low toxicity*.
3. *fewer adverse reactions*.

- (A) 1 only
(B) 1 and 2 only
(C) *2 and 3 only*
(D) 1, 2, and 3

The relatively *low-osmolality* and nonionic, water-soluble contrast media available to radiology departments

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have outstanding advantages, especially for patients with a history of allergic reaction.

They were originally used for intrathecal injections (myelography), but they were quickly accepted for intravascular injections as well.

Side effects and allergic reactions are less likely and less severe with these media.

Their one very significant disadvantage is their high cost compared to ionic contrast media.

(Adler & Carlton, p 328)

Ans. C

48. A *vasodilator* would most likely be used for

(A) *angina*.

(B) cardiac arrest.

(C) bradycardia.

(D) antihistamine.

Anginal pain, caused by constriction of blood vessels, may be relieved with the administration of a *vasodilator* such as *nitroglycerin*.

❖ *Bradycardia* (abnormally slow heartbeat) and *Cardiac arrest* are treated with *vasoconstrictors* such as dopamine or epinephrine to increase blood pressure.

❖ *Antihistamines* such as diphenhydramine (Benadryl) are used to treat allergic reactions and anaphylactic shock.

(Adler & Carlton, p 292)

Ans. A

49. According to the CDC (*Centers for Disease Control and Prevention*), all of the following precaution guidelines are true, except

(A) Airborne precautions require that the patient wear a mask.

(B) *Masks are indicated when caring for patients on MRSA precautions.*

(C) Patients under MRSA precautions require a negative-pressure

room.

(D) Gloves are indicated when caring for a patient on droplet precautions.

Category-specific isolations have been replaced by *transmission-based precautions*: *airborne*, *droplet*, and *contact*.

Under these guidelines, some conditions or diseases can fall into more than one category.

1) *Airborne precautions* are employed with patients suspected or known to be infected with the *tubercle bacillus (TB)*, *chickenpox (varicella)*, or *measles (rubeola)*.

o Airborne precautions require that the patient wear a mask to avoid the spread of bronchial secretions or other pathogens during coughing.

o If the patient is unable or unwilling to wear a mask, the radiographer must wear one.

o The radiographer should wear gloves, but a gown is required only if flagrant contamination is likely.

o Patients under *airborne precautions* require a *private, specially ventilated (negative-pressure) room*.

2) A private room is also indicated for all patients on *droplet precautions*, i.e., with diseases transmitted via *large droplets* expelled from the patient while speaking, sneezing, or coughing.

o The pathogenic droplets can infect others when they come in contact with mouth or nasal mucosa or conjunctiva. *Rubella* ("German measles"), *mumps*, and *influenza* are among the diseases spread by droplet contact; a *private room* is required for the patient, and health-care practitioners should use *gown and gloves*.

3) *Contact precautions* require a *private patient room* and the use of *gloves*, *mask*, and *gown* for anyone coming in direct contact with the infected individual or his or her

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environment.

- Any diseases spread by direct or close contact, such as MRSA (*methicillin-resistant Staphylococcus aureus*), conjunctivitis, and hepatitis A, require **contact precautions**.

(Adler & Carlton, p 215)

Ans. C

50. Which of the following medical **equipment** is used to determine blood pressure?

1. Pulse oximeter
2. **Stethoscope**
3. **Sphygmomanometer**

(A) 1 and 2 only

(B) 1 and 3 only

(C) 2 and 3 only

(D) 1, 2, and 3

❖ A **stethoscope** and a **sphygmomanometer** are used together to measure blood pressure.

- The first sound heard is the systolic pressure, and the normal range is 110 to 140 mmHg. When the sound is no longer heard, the diastolic pressure is recorded.
- The normal diastolic range is 60 to 90 mmHg.
- Elevated blood pressure is called **hypertension**.
- **Hypotension**, or low blood pressure, is not of concern unless it is caused by injury or disease; in that case, it can result in shock.

❖ A **pulse oximeter** is used to measure a patient's pulse rate and oxygen saturation level.

(Adler & Carlton, p 181)

Ans. C

51. The patient is placed in the **lithotomy position** for which of the following procedures?

- (A) Myelography
- (B) Venography
- (C) T-tube cholangiography
- (D) Hysterosalpingography**

❖ The **lithotomy position** is generally

employed for **hysterosalpingography**.

- The lithotomy position requires that the patient lie on the back with buttocks at the edge of the table.
- The hips are flexed, the knees are flexed and resting on leg supports, and the feet rest in stirrups.

(Adler & Carlton, p 221)

Ans. D

52. A patient experiencing an episode of **syncope** should be placed in which of the following positions?

(A) Dorsal recumbent with head elevated

(B) Dorsal recumbent with feet elevated

(C) Lateral recumbent

(D) Seated with feet supported

❖ **Syncope**, or fainting, is the **result of a drop in blood pressure** caused by insufficient blood (oxygen) flow to the brain.

- The patient should be helped into a **dorsal recumbent position with feet elevated** in order to facilitate blood flow to the brain.

(Ehrlich et al, p 239)

Ans. B

53. When a radiographer is obtaining a patient history, both **subjective** and **objective** data should be obtained. An example of **subjective** data is

(A) The patient appears to have a productive cough.

(B) The patient has a blood pressure of 130/95.

(C) The patient states that he experiences extreme pain in the upright position.

(D) The patient has a palpable mass in the right upper quadrant of the left breast.

Obtaining a complete and accurate history from the patient for the

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radiologist is an important aspect of a radiographer's job. Both subjective and objective data should be collected.

- ❖ **Objective data** include signs and symptoms that can be observed, such as a cough, a lump, or elevated blood pressure.
- ❖ **Subjective data** relate to what the patient feels, and to what extent.
 - A patient may experience pain, but is it mild or severe? Is it localized or general? Does the pain increase or decrease under different circumstances?
 - A radiographer should explore this with a patient and document the information on the requisition for the radiologist.

(Adler & Carlton, p 137)

Ans. C

54. A **nosocomial infection** is a(n)
- (A) infection acquired at a large gathering.
 - (B) upper respiratory infection.
 - (C) **infection acquired in a hospital.**
 - (D) type of rhinitis.

- ❖ **Nosocomial diseases** are those acquired in **hospitals**, especially by patients whose resistance to infection has been diminished by their illness.
 - Cleanliness is essential to decrease the number of nosocomial infections.
 - The x-ray table must be cleaned and the pillowcase changed between patients.
 - The **most common** nosocomial infection is the **urinary tract infection** (UTI).

(Gurley & Callaway, pp 178-179)

Ans. C

55. You and a fellow radiographer have received an unconscious patient from a **motor vehicle accident**. As you perform the examination, it is important that you
1. **refer to the patient by name.**
 2. **make only those statements that**

you would make with a conscious patient.

3. **reassure the patient about what you are doing.**

- (A) 1 only
- (B) 1 and 2 only
- (C) 2 and 3 only
- (D) **1, 2, and 3**

An unconscious patient is frequently able to hear and understand all that is going on, even though he or she is unable to respond.

Therefore, while performing the exam, the radiographer should always refer to the patient by name and take care to continually explain what is being done and reassure the patient.

(Adler & Carlton, p 126)

Ans. D

56. **Hypochlorite bleach** (Clorox) and Lysol are examples of
- (A) antiseptics.
 - (B) bacteriostatics.
 - (C) antifungal agents.
 - (D) **disinfectants.**

- ❖ **Hypochlorite bleach** (Clorox) and Lysol are examples of **disinfectants**.
 - a) **Disinfectants** are used in radiology departments to **clean equipment** and to **remove microorganisms** from areas such as radiographic tables.
 - b) **Antiseptics** are also used to stop the growth of microorganisms, but they are often applied to the skin, not to radiographic equipment.
 - c) **Antifungal** medications can be administered systemically or topically to treat or prevent fungal infections.
 - d) **Antibacterial** medications (bacteriostatics) can also be administered systemically or externally. Tetracycline is a systemic antibacterial medication.

(Ehrlich et al, p 153)

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Ans. D

57. Conditions in which there is a lack of normal bone calcification include

1. rickets.
2. osteomalacia.
3. osteoarthritis.

(A) 1 only

(B) 1 and 2 only

(C) 2 and 3 only

(D) 1, 2, and 3

❖ Rickets and osteomalacia are disorders in which there is softening of bone.

a) Rickets results from a deficiency of vitamin D and usually is found affecting the growing bones of young children. The body's weight on the soft bones of the legs results in bowed and misshapen legs.

b) Osteomalacia is an adult condition in which new bone fails to calcify. It is a painful condition and can result in easily fractured bones, especially in the lower extremities.

❖ Osteoarthritis is often seen in the elderly and is characterized by degeneration of articular cartilage in adjacent bones. The resulting rubbing of bone against bone results in pain and deterioration.

(Tortora & Grabowski, p 181)

Ans. B

58. What is the most common means of spreading infection?

(A) Improperly disposed of contaminated waste

(B) Instruments that are improperly sterilized

(C) Soiled linen

(D) Human hands

Microorganisms are most commonly spread from one person to another by human hands and can be prevented from spreading by handwashing.

Contaminated waste products, soiled linen, and improperly sterilized instruments are all ways in which

microorganisms can travel.

Not every patient will come into contact with these items.

However, the health-care worker is in constant contact with the patient and is therefore a constant threat for the spread of infection.

(Torres, p 54)

Ans. D

59. Which of the following statements are true regarding a two-member team performing mobile radiography on a patient with MRSA (methicillin-resistant Staphylococcus aureus) precautions?

1. One radiographer remains "clean" that is, he or she has no physical contact with the patient.

2. The radiographer who positions the mobile unit also makes the exposure.

3. The radiographer who positions the cassette also retrieves the cassette and removes it from its plastic protective cover.

(A) 1 and 2 only

(B) 1 and 3 only

(C) 2 and 3 only

(D) 1, 2, and 3

When a two-member team of radiographers is performing mobile radiography on a patient with contact precautions, such as an MRSA patient, one radiographer remains "clean" that is, he or she has no physical contact with the patient.

The clean radiographer will position the mobile unit and make the exposure.

The other member of the team will position the cassette and retrieve the cassette.

As the two radiographers fold down the cassette's protective plastic cover, the clean radiographer will remove the cassette from the plastic.

Both radiographers should be protected with gowns, gloves, and masks if the patient is on contact precautions.

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Additionally, after the exam is completed, the mobile unit should be cleaned with a disinfectant.

Conditions requiring the use of contact precautions also include hepatitis A and varicella.

(Torres, pp 61-66)

Ans. A

60. In which of the following conditions is a double-contrast barium enema (BE) essential for demonstration of the condition?

1. *Polyps*
2. *Colitis*
3. Diverticulosis

(A) 1 only

(B) *1 and 2 only*

(C) 1 and 3 only

(D) 1, 2, and 3

Double-contrast studies of the large bowel are particularly useful for demonstration of the bowel wall, and anything projecting from it, as in diverticulosis.

Polyps are projections of the bowel wall mucous membrane into the bowel lumen.

Colitis is inflammation of the large bowel, often associated with ulcerations of the mucosal wall.

A single-contrast study would most likely obliterate these mucosal conditions, but coating the bowel mucosa with barium and subsequent filling the bowel with air (double contrast) provides optimal delineation.

(Ballinger & Frank, vol 2, p 128)

Ans. B

61. The *type of shock* associated with *pooling of blood in the peripheral vessels* is classified as

- (A) *neurogenic*.
- (B) cardiogenic.
- (C) hypovolemic.
- (D) septic.

The type of shock associated with the *pooling of blood in the peripheral vessels*

is classified as *Neurogenic shock*.

This occurs in cases of trauma to the central nervous system that results in decreased arterial resistance and pooling of blood in peripheral vessels.

Cardiogenic shock is related to cardiac failure and results from *interference with heart function*.

- o It can occur in cases of cardiac tamponade, pulmonary embolus, or myocardial infarction.

Hypovolemic shock is related to *loss of large amounts of blood*, either from internal bleeding or from hemorrhage associated with trauma.

Septic shock, along with *anaphylactic shock*, is generally classified as *vasogenic shock*.

(Adler & Carlton, p 266)

Ans. A

62. The chemical agent *alcohol* can be used effectively as a(n)

- (A) *antiseptic*.
- (B) germicide.
- (C) disinfectant.
- (D) antibiotic.

Some chemical agents used in health-care facilities function to kill pathogenic microorganisms, while others function to inhibit the growth / spread of pathogenic microorganisms.

Germicides and *disinfectants* are *used to kill pathogenic microorganisms*, whereas *antiseptics* (like alcohol) are *used to stop their growth / spread*.

Sterilization is another associated term; it *refers to the killing of all microorganisms* and their spores.

(Ballinger & Frank, vol 1, p 15)

Ans. A

63. Anaphylaxis is the term used to describe
- (A) an inflammatory reaction.
 - (B) bronchial asthma.
 - (C) acute chest pain.
 - (D) *allergic shock*.

❖ A *severe allergic reaction* affecting

several tissue functions is referred to as *anaphylaxis* or *anaphylactic shock*.

- It is characterized by *dyspnea* (difficulty breathing) caused by rapid swelling of the respiratory tract and a sharp drop in blood pressure.
- Individuals who are sensitive to bee stings and certain medications, including iodinated contrast agents, are candidates for this reaction.

(Adler & Carlton, p 267)

Ans. D

64. *What instructions* might a patient receive upon completing a barium enema (BE) examination?

1. *Drink plenty of fluids.*
2. *Take a mild laxative.*
3. Withhold fluids for 6 h.

(A) 1 and 2 only

(B) 2 and 3 only

(C) 2 only

(D) 3 only

Barium can dry and harden in the large bowel, causing symptoms ranging from mild constipation to bowel obstruction.

It is therefore essential that the radiographer provide clear instructions, especially to outpatients, on follow-up care, along with the rationale for this care.

In order to avoid the possibility of fecal impaction, the *patient should drink plenty of fluids for the next few days and take a mild laxative such as milk of magnesia.*

(Torres, pp 211-212)

Ans. A

65. Physical changes characteristic of *gerontologic patients* usually include

1. *loss of bone calcium.*
2. loss of hearing.
3. loss of mental alertness.

(A) 1 only

(B) 1 and 2 only

(C) 1 and 3 only

(D) 1, 2, and 3

Gerontology, or *geriatrics*, is the study of the elderly.

While *bone demineralization* and *loss of muscle mass* occur to a greater or lesser degree in most elderly individuals, the radiographer must not assume that all gerontologic patients are hard of hearing, clumsy, or not mentally alert.

Today many elderly people remain very active, staying mentally and physically agile well into their so-called golden years.

The radiographer must keep this in mind as he or she provides age-specific care to the gerontologic patient.

(Torres, p 181)

Ans. A

66. The pain experienced by an individual whose *coronary arteries are not conveying sufficient blood to the heart* is called

(A) tachycardia.

(B) bradycardia.

(C) *angina pectoris.*

(D) syncope.

❖ An individual whose *coronary arteries are not carrying enough blood to the heart* muscle (myocardium), as a result of partial or complete blockage of a cardiac vessel, experiences crushing pain in the chest, frequently radiating to the left jaw and arm.

○ This is termed *angina pectoris*.

○ It may be relieved by the drug nitroglycerin, which dilates the coronary arteries, thus facilitating circulation.

❖ *Tachycardia* refers to rapid heart rate, and bradycardia to slow heart rate.

❖ *Syncope* is fainting.

(Adler & Carlton, p 292)

Ans. C

67. Rapid onset of severe respiratory or cardiovascular symptoms after ingestion

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or injection of a drug, vaccine, contrast agent, or food, or after an insect bite,
best describes

- (A) asthma.
- (B) **anaphylaxis.**
- (C) myocardial infarction.
- (D) rhinitis.

- ❖ **Anaphylaxis** is an acute reaction characterized by the sudden onset of urticaria, respiratory distress, vascular collapse, or systemic shock, sometimes leading to death.
 - It is caused by ingestion or injection of a sensitizing agent such as a drug, vaccine, contrast agent, or food, or by an insect bite.
 - **Asthma** and **rhinitis** are examples of **allergic reactions**.
- ❖ **Myocardial Infarction** (MI) is caused by partial or complete occlusion of a coronary artery.

(Torres, p 155)

Ans. B

68. The **radiographer must perform** which of the following procedures prior to **entering a contact isolation room** with a mobile x-ray unit?

1. Put on gown and gloves only.
2. **Put on gown, gloves, mask, and cap.**
3. Clean the mobile x-ray unit.

- (A) 1 only
- (B) 2 only
- (C) 1 and 3 only
- (D) 2 and 3 only

When performing bedside radiography in a **contact isolation room**, the **radiographer** should **wear a gown, gloves, mask, and cap.**

The cassettes are prepared for the examination by placing a pillowcase over them to protect them from contamination.

Whenever possible, one person should manipulate the mobile unit and remain "clean" while the other handles the patient.

The mobile unit should be cleaned with a disinfectant upon exiting the patient's room, not prior to entering.

(Torres, pp 61-66)

Ans. B

69. Following a barium enema (BE) examination, the patient should be given which of the following instructions?

1. **Increase fluid and fiber intake for several days.**
2. **Changes in stool color will occur until all barium has been evacuated.**
3. **Contact a physician if no bowel movement occurs in 24 h**

- (A) 1 only
- (B) 2 only
- (C) 1 and 3 only
- (D) **1, 2, and 3**

- ❖ **Physicians often prescribe** a **mild laxative** to aid in the elimination of barium sulfate.

- If a laxative is not given, the patient should be instructed to **increase dietary fluid and fiber** and to monitor bowel movements (**the patient should have at least one within 24 h**).

- ❖ Patients should also be aware of the white-colored appearance of their stool that will be present until all barium is expelled.

(Torres, p 208)

Ans. D

70. A patient suffering from **orthopnea** would experience the least discomfort in which body position?

- (A) Fowler's
- (B) Trendelenburg
- (C) Recumbent
- (D) **Erect**

- ❖ **Orthopnea** is a respiratory condition in which the patient has difficulty breathing (**dyspnea**) in any position other than erect.

- The patient is usually comfortable in the **erect**, standing, or seated

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position.

- Trendelenburg position places the patient's head lower than the rest of the body.
- Fowler's position is a semierect position
- Recumbent position is lying down.

(Ehrlich et al, p 127)

Ans. D

71. Which statement(s) would be true regarding tracheostomy patients?

1. Tracheostomy patients have difficulty speaking.
2. A routine chest x-ray requires the tracheostomy tubing to be rotated out of view.
3. Audible rattling sounds indicate a need for suction.

(A) 1 only

(B) 1 and 2 only

(C) 1 and 3 only

(D) 1, 2, and 3

The tracheostomy patient will have difficulty speaking as a result of the redirection of the air past the vocal cords.

Gurgling or rattling sounds coming from the trachea indicate an excess accumulation of secretions, requiring suction with sterile catheters.

Any rotation or movement of the tracheostomy tube may cause the tube to become dislodged, and an obstructed airway could result.

(Torres, p 228)

Ans. C

72. What is the most widely used method of vascular catheterization?

- (A) Doppler
- (B) Moniz
- (C) Grandy
- (D) Seldinger

With the Seldinger technique, a needle with an inner cannula is used to pierce an artery (usually the femoral).

The inner cannula is then removed, a

flexible guidewire is inserted, the needle is removed, and a catheter is slipped over the guidewire into the artery.

The guidewire is then removed, leaving the catheter in the artery.

The Seldinger technique reduces the risk of extravasation (compared to that from a direct needle stick).

The patient may be positioned as required, and the radiographs may be inspected while the catheter remains safely in place.

The axial or brachial arteries may be used, but the femoral is the most common approach.

Doppler is an ultrasonography term referring to the detection of movement (e.g., blood flow through blood vessels). The Grandy method describes the routine lateral projection of the cervical spine.

Egaz Moniz introduced cerebral angiography in 1927.

(Ballinger & Frank, vol 3, pp 30-31)

Ans. D

73. A diuretic is used to

- (A) induce vomiting.
- (B) stimulate defecation.
- (C) promote elimination of urine.
- (D) inhibit coughing.

Diuretics are used to promote urine elimination in individuals whose tissues are retaining excessive fluid.

Emetics induce vomiting, and cathartics stimulate defecation.

Antitussives are used to inhibit coughing. (Torres, p 257)

Ans. C

74. All of the following rules regarding proper handwashing technique are correct except

- (A) Keep hands and forearms lower than elbows.
- (B) Use paper towels to turn water on.
- (C) Avoid using hand lotions whenever possible.

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(D) Carefully wash all surfaces and between fingers.

- ❖ Frequent and correct handwashing is an essential part of medical asepsis; it is the best method for avoiding the spread of microorganisms.
 - If the faucet cannot be operated with the knee or a foot pedal, *it should be opened and closed using paper towels.*
 - Care should be taken to wash all surfaces of the hand and between the fingers thoroughly.
 - The hands and forearms should always be kept below the elbows.
 - Hand lotions should be used frequently to keep hands from chapping.
 - Unbroken skin prevents the entry of microorganisms; dry, cracked skin breaks down that defense and permits the entry of microorganisms.

(Ehrlich et al, pp 153-155)

Ans. C

75. Which of the following is a *vasopressor* and may be used for an *anaphylactic reaction* or cardiac arrest?

- (A) Nitroglycerin
- (B) *Epinephrine*
- (C) Hydrocortisone
- (D) Digitoxin

- *Epinephrine* (Adrenalin) is the vasopressor used to treat an anaphylactic reaction or cardiac arrest.
- *Nitroglycerin* is a vasodilator.
- *Hydrocortisone* is a steroid that may be used to treat bronchial asthma, allergic reactions, and inflammatory reactions.
- *Digitoxin* is used to treat cardiac fibrillation.

(Ehrlich et al, pp 186-187)

Ans. B

76. The *Heimlich maneuver* is used if a patient is

- (A) in cardiac arrest.
- (B) *choking.*
- (C) having a seizure.
- (D) suffering from hiccups.

- ❖ The *Heimlich maneuver* is used when a *person is choking.* If you suspect that an individual is choking, be certain that the airway is indeed obstructed before attempting the Heimlich maneuver.

- A person with a completely obstructed airway will not be able to speak or cough.
- If the person cannot speak or cough, then the airway is obstructed, and the Heimlich maneuver should be performed.
- The proper method is to stand behind the choking victim with one hand in a fist, thumb side in, midway between the navel and the xiphoid tip.
- Place the other hand over the closed fist with the palm open and apply pressure in and up. Repeat the thrust several times, until the object is dislodged.

- ❖ For an infant, the procedure is modified.

- Four back blows are given, midway between the scapulae, using the heel of the hand. If the object is not dislodged, the baby is turned over (being very careful to support the baby's head and spine), and four chest thrusts are performed just below the nipple line, using several fingers.

(Adler & Carlton, pp 268-269)

Ans. B

77. The *pulse can be detected only* by the use of a *stethoscope* in which of the following locations?

- (A) Wrist
- (B) *Apex of the heart*
- (C) Groin

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(D) Neck

- ❖ As blood pulsates through the arteries, a throb can be detected.
 - This throb or *pulse* can be readily palpated at locations where the arteries are superficial (examples are the wrist, groin, neck, and posterior surface of the knee).
 - The *apical pulse can be detected only with a stethoscope.*

(Torres, p 133)

Ans. B

78. The most effective method of *sterilization* is

- (A) dry heat.
- (B) *moist heat.*
- (C) pasteurization.
- (D) freezing.

- ❖ The *most effective method of sterilization* is *moist heat*, using steam under pressure.
 - This is known as autoclaving.
 - Sterilization with *dry heat* requires *higher temperatures for longer periods of time* than sterilization with moist heat.
 - *Pasteurization* is moderate heating with rapid cooling; it is frequently used in the commercial preparation of milk and alcoholic beverages such as wine and beer.
 - *It is not a form of sterilization.*
 - *Freezing* can also kill some microbes, *but it is not a form of sterilization.*

(Torres, p 106)

Ans. B

79. An *MRI procedure* is *contraindicated for a patient* having

- (A) herniated disc.
- (B) *aneurysm clips.*
- (C) dental fillings.
- (D) subdural bleeding.

- The presence of *aneurysm clips* is

contraindication for MRI; even slight shift can cause damage.

- MRI can be performed for *herniated disc* and *subdural bleeding.*
- *Dental fillings do not contraindicate MRI.*

(Ehrlich, McCloskey & Daly, p 192)

Ans. B

80. Which of the following should be *used to disinfect the area after a blood spill?*

- (A) Soap and water
- (B) Betadine solution
- (C) *One part bleach to ten parts water*
- (D) One part alcohol to ten parts water

The CDC considers all body substances to be potential sources of infection.

It lists several precautionary measures that should be taken when dealing with body substances.

Gloves must be *used when wiping up bloodspills, and the area should be disinfected* with a solution of *one part bleach to ten parts water.*

(Adler & Carlton, p 214)

Ans. C

81. Factors that are *important to evaluate when selecting contrast media* include

- 1. *miscibility.*
- 2. *potential toxicity.*
- 3. *viscosity.*

- (A) 1 and 2 only
- (B) 2 and 3 only
- (C) 1 and 3 only
- (D) *1, 2, and 3*

❖ All *three factors are important considerations.*

- 1.) *Miscibility* describes the *ability of a contrast medium to mix with blood* as it is injected into the bloodstream.
- 2.) Potential *toxicity* has always been an important consideration, as side effects from contrast media can be life-

threatening.

- The new nonionic contrast media have considerably lower toxicity than the ionic compounds.
- 3.) **Viscosity** is a term that denotes the degree of stickiness or gumminess of the contrast medium.
- A contrast medium with higher viscosity can offer considerable resistance upon injection.

(Torres, p 266)

Ans. D

82. When **radiographing the elderly**, it is helpful to

1. move quickly.
2. **address them by their full name.**
3. **give straightforward instructions.**

(A) 1 only

(B) 1 and 2 only

(C) 2 and 3 only

(D) 1, 2, and 3

-
- ❖ Elderly patients dislike being pushed or hurried along.

- They appreciate the radiographer who is caring enough to take the extra few minutes necessary to comfort them.
- Some elderly patients are easily confused, and it is **best to address them by their full name and keep instructions simple and direct.**
- The elderly require the same respectful, dignified care as all other patients.

(Adler & Carlton, pp 129-130)

Ans. C

83. Medication can be administered by which of the following routes?

1. Orally
2. Intravenously
3. Intramuscularly

(A) 1 and 2 only

(B) 1 and 3 only

(C) 2 and 3 only

(D) 1, 2, and 3

-
- Medications are commonly administered orally (by mouth).

- They may also be administered directly into a vein (**intravenously**), into a muscle (**intramuscularly**), or under the skin (**subcutaneously**).

(Ehrlich, McCloskey & Daly, pp 192-193)

Ans. D

84. The **normal average rate of respiration** for a healthy adult patient is

(A) 5 to 7 breaths/min.

(B) 8 to 12 breaths/min.

(C) 12 to 20 breaths/min.

(D) 20 to 30 breaths/min.

-
- ❖ The **normal average rate of respiration** for a healthy adult patient is between **12 and 20 breaths/min.**

- ❖ For children, the rate is higher, averaging between 20 and 30 breaths/min.

- In addition to monitoring the respiratory rate, it is also important to monitor the depth (shallow or labored) and pattern (regularity) of respiration.

- ❖ A respiratory rate greater than 20 breaths/min in an adult would be considered **tachypnea.**

(Adler & Carlton, pp 176-177)

Ans. C

85. All of the **following statements are true** regarding the administration of a barium enema to a patient with a colostomy, except

(A) The dressing should be removed and disposed of.

(B) The drainage pouch should be retained unless a fresh one can be provided.

(C) The colostomy tip or catheter should be selected by the radiologist.

(D) The patient should not be permitted to insert the colostomy tip.

-
- ❖ When preparing a colostomy

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patient for a barium enema, the *dressing should be removed and disposed of*.

- ❖ The *drainage pouch may be retained for reuse* unless the patient indicates that she or he has a fresh pouch or, if the department stocks them, the radiographer offers to provide one.
- ❖ The choice of *colostomy tip or catheter should be discussed with the radiologist*.
- If a catheter is selected, the inflation cuff must be large enough to prevent barium from leaking, yet small enough so that the stoma area is not damaged.
- ❖ It is always a good idea to ask the patient if he or she would prefer to insert the colostomy tip.
- ❖ Patients are often used to caring for their stoma, and they may be more comfortable if they have control of the situation.

(Torres, p 209)

Ans. D

86. Because of *medicolegal considerations*, radiographic images are required to include all the following information, except

- (A) the patient's name and/or identification number.
- (B) *the patient's birth date.*
- (C) a right or left side marker.
- (D) the date of the examination.

Every radiographic image *must* include

- (1) the patient's name or ID number;
- (2) the side marker, right or left;
- (3) the date of the examination; and
- (4) the identity of the institution or office.

Additional information may be included: the patient's birth date or age, the attending physician, and the time of day.

When multiple exams (e.g., chest exams or small bowel images) of a patient are

made on the same day, it becomes crucial that the time the radiographs were taken be included on the film.

This allows the physician to track the patient's progress.

(Ballinger & Frank, vol 1, pp 22-23)

Ans. B

87. The *condition that allows blood to shunt between the right and left ventricles* is called

- (A) patent ductus arteriosus.
- (B) coarctation of the aorta.
- (C) atrial septal defect.
- (D) *ventricular septal defect.*

- Ventricular septal defect is a congenital heart condition characterized by a hole in the interventricular septum, which allows oxygenated and unoxygenated blood to mix.

- Some interventricular septal defects are small and close spontaneously; others require surgery.

- Coarctation of the aorta is a narrowing or constriction of the aorta.

- Atrial septal defect is a small hole (the remnant of the fetal foramen ovale) in the interatrial septum.

- It usually closes spontaneously in the first months of life; if it persists or is unusually large, surgical repair is necessary.

- A Patent ductus arteriosus is one that persists and requires surgical closure.

- The *ductus arteriosus* is a short fetal blood vessel connecting the aorta and pulmonary artery that usually closes within 10 to 15 h after birth.

(Taber's, p 2323)

Ans. D

88. Which of the following statements are true regarding the proper care of a patient with a tracheostomy?

- 1. *Employ sterile technique if you must touch a tracheostomy for*

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- any reason.
2. Before you suction a tracheostomy, the patient should be well aerated.
 3. Never suction for longer than 15 s, permitting the patient to rest in between.

(A) 1 and 2 only
(B) 1 and 3 only
(C) 2 and 3 only
(D) 1, 2, and 3

All of the statements in the question are true regarding the proper care of a patient with a tracheostomy.

- If a tracheostomy needs to be touched for any reason, sterile technique should be employed to avoid the possibility of infection.
- Patients with tracheostomies require frequent suction.
- This is usually not performed by the technologist, but radiographers may be called upon to assist with suctioning, especially for patients who must be in the radiology department for lengthy procedures.
- Patients who are to be suctioned should be aerated beforehand (that is, oxygen should be administered prior to suctioning).
- It is also important that patients be permitted to rest during suctioning.
 - Never suction for longer than 15 s; check breath sounds with a stethoscope to ensure that the airway is clear.
- ❖ It is the radiographer's responsibility to check the work area and ensure that the suction is working and that ample ancillary supplies (suction kit, catheters, tubing) are available.

(Adler & Carlton, p 235)

Ans. D

89. Skin discoloration due to **cyanosis** may be observed in the
1. **gums.**
 2. **nailbeds.**

3. thorax.
- (A) 1 only
(B) 1 and 2 only
(C) 3 only
(D) 1, 2, and 3

- ❖ **Cyanosis** is a condition resulting from a deficiency of oxygen circulating in the blood.
- It is characterized by bluish **discoloration of the gums, nailbeds,** and **earlobes,** and **around the mouth.**
 - Cyanosis may be accompanied by labored breathing or other types of respiratory distress.

(Torres, p 137)

Ans. B

90. Which of the following radiographic procedures requires an **intrathecal injection**?

(A) Intravenous pyelogram
(B) Myelogram
(C) Lymphangiogram
(D) Computed tomography (CT)

- ❖ A **myelogram,** or radiographic examination of the spinal canal, requires an intrathecal injection.
- **Intrathecal administration** of contrast medium is usually at the level of L2/3 or L3/4.
 - ❖ An **intravenous pyelogram** is performed with an injection of contrast medium into the venous system.
 - ❖ A **lymphangiogram** requires that contrast medium be delivered into the lymphatic vessels.
 - A CT scan may or may not require the use of an intravenous injection.

(Torres, p 306)

Ans. B

91. When a **patient with an arm injury needs help in undressing,** the radiographer should
- (A) remove clothing from the injured

arm first.

(B) *remove clothing from the uninjured arm first.*

(C) always remove clothing from the left arm first.

(D) always cut clothing away from the injured extremity.

- ❖ When assisting the patient with changing, *first remove clothing from the unaffected side.*
- If this is done, removing clothing from the affected side will require less movement and effort.
- The patient's clothing should be cut away only as a last resort in cases of extreme emergency and with the patient's consent.

(Torres, p 88)

Ans. B

92. A *patient is usually required to drink a barium sulfate suspension in order to demonstrate which of the following structure(s)?*

1. *Pylorus*
2. Sigmoid
3. *Duodenum*

(A) 1 and 2 only

(B) *1 and 3 only*

(C) 2 and 3 only

(D) 3 only

- ❖ *Oral administration of barium sulfate is used to demonstrate the upper digestive system the esophagus, fundus, body and pylorus of the stomach and barium progression through the small bowel.*

- ❖ The *large bowel*, including the *sigmoid colon*, is *usually demonstrated via rectal administration of barium.*

(Gurley & Callaway, pp 125-126)

Ans. B

93. Protective or "*reverse*" isolation is required in which of the following conditions?

1. Tuberculosis
2. *Burns*

3. *Leukemia*

(A) 1 only

(B) 1 and 2 only

(C) 2 and 3 only

(D) 1, 2, and 3

- ❖ *Protective* or "*reverse*" *isolation* is used to keep the susceptible patient from becoming infected.

- *Patients who have suffered burns* have lost a very important means of protection, their skin, and therefore have increased susceptibility to bacterial invasion.

- Patients whose immune systems are depressed have lost the ability to combat infection, and hence are more susceptible to infection.

- ❖ *Active tuberculosis* requires *airborne precautions*, not protective isolation.

(Ehrlich et al, pp 163-165)

Ans. C

94. When caring for a patient with an IV, the radiographer should keep the medication

(A) *18 to 20 in above the level of the vein.*

(B) 18 to 20 in below the level of the vein.

(C) 28 to 30 in above the level of the vein.

(D) 28 to 30 in below the level of the vein.

- ❖ It is generally recommended that the *IV bottle be kept 18 to 20 in above the level of the vein.*

- If the bottle is *too high*, the pressure of the IV fluid can cause it to pass through the vein into surrounding tissues, causing a painful and potentially harmful condition.

- If the IV bottle is *too low*, blood may return through the needle into the tubing, form a clot, and obstruct the flow of IV fluid.

(Torres, p 293)

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Ans. A

95. Radiographs are the property of the

- (A) radiologist.
- (B) patient.
- (C) health-care institution.
- (D) referring physician.

- ❖ Radiographs are the property of the health-care institution and are a part of every patient's permanent medical record.
- They are often retained on file for about 7 years or, in the case of pediatric patients, until the patient reaches maturity.
- They are not the personal property of either the radiologist or the referring physician.
- If a patient changes doctors or needs a second opinion, copies can be requested.
- The patient may also borrow the originals, which must be returned, or he or she may pay for copies.

(Ehrlich et al, pp 82-83)

Ans. C

96. When a patient arrives in the radiology department with a urinary Foley catheter bag, it is important to

- (A) place the drainage bag above the level of the bladder.
- (B) place the drainage bag at the same level as the bladder.
- (C) place the drainage bag below the level of the bladder.
- (D) clamp the Foley catheter.

- ❖ When caring for a patient with an indwelling Foley catheter, place the drainage bag and tubing below the level of the bladder to maintain the gravity flow of urine.
- Placement of the tubing or bag above or level with the bladder will allow backflow of urine into the bladder.
- This reflux of urine can increase the chance of urinary tract infection (UTI).

(Adler & Carlton, p 238)

Ans. C

97. Chemical substances that inhibit the growth of pathogenic microorganisms without necessarily killing them are called

- 1. antiseptics.
- 2. germicides.
- 3. disinfectants.

(A) 1 only

(B) 1 and 2 only

(C) 2 and 3 only

(D) 1, 2, and 3

- ❖ Some chemical agents used in health-care facilities function to kill pathogenic microorganisms, while others function to inhibit the growth / spread of pathogenic microorganisms, are called Antiseptics
- ❖ Germicides and disinfectants are used to kill pathogenic microorganisms, whereas antiseptics (like alcohol) are used to stop their growth / spread.
- ❖ Sterilization is another associated term; it refers to the killing of all microorganisms and their spores.

(Ballinger & Frank, vol 1, p 15)

Ans. A

98. Local anesthetics are likely to be used in all of the following radiographic examinations except

- (A) lower-extremity arteriography.
- (B) arthrography.
- (C) myelography.
- (D) postoperative or T-tube cholangiography.

- ❖ Local anesthetics are often used to alleviate the pain caused by the insertion of a large-caliber needle for the injection of contrast media, as in arteriography, arthrography, or myelography.
- ❖ A T-tube cholangiogram is a postoperative examination of the

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biliary tract.

- This examination is painless and permits administration of the contrast medium via the T tube.

(Ballinger & Frank, vol 2, p 78)

Ans. D

99. Which of the following sites are commonly used for an intravenous injection?

1. *Antecubital vein*
2. *Basilic vein*
3. Popliteal vein

(A) 1 and 2

(B) 1 and 3

(C) 2 and 3

(D) 1, 2, and 3

-
- ❖ Either the *antecubital vein* or the *basilic vein*, both found in the elbow region, may be used for an intravenous injection.
 - Other veins in the area include the *cephalic* and *accessory veins*.
 - ❖ The *popliteal vein*, found in the area of the knee, is not commonly used for an intravenous injection.

(Adler & Carlton, p 300)

Ans. A

100. When performing *cardiopulmonary resuscitation (CPR)* on an infant, it is required that the number of compressions per minute, compared to that for an adult,

- (A) remain the same.
- (B) double.
- (C) decrease.
- (D) *increase*.

-
- ❖ The respiratory rate of an infant is much faster than that of an adult; therefore, the number of compressions per minute is also greater.
 - Infant CPR requires 5 compressions to 1 breath.
 - There should be at least 100 compressions per minute.

(Adler & Carlton, p 273)

Ans. D

101. A radiographer who discloses confidential information to unauthorized individuals may be found guilty of

(A) *invasion of privacy*.

(B) slander.

(C) libel.

(D) defamation.

-
- ❖ A radiographer who discloses confidential information to unauthorized individuals may be found guilty of *invasion of privacy*.
 - ❖ If the disclosure is in some way detrimental or otherwise harmful to the patient, the radiographer may also be accused of *defamation*.
 - Spoken defamation is *slander*; written defamation is *libel*.

(Saia, p 8)

Ans. A

102. *Involuntary patient motion* can be caused by

1. *post-traumatic shock*.
2. *medication*.
3. *the temperature of the room*.

(A) 1 only

(B) 1 and 2 only

(C) 1 and 3 only

(D) *1, 2, and 3*

-
- ❖ The radiographer must be aware that the patient's condition has a significant impact on motion control.
 - ❖ The patient may wish to be very cooperative, but conditions beyond his or her control may exist.

Patients often exhibit uncontrolled motion following a *traumatic injury*.

Medication can worsen the condition.

Traumatized patients are often more sensitive and likely to feel *chilled*.

Peristalsis is another type of involuntary motion.

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(Adler & Carlton, pp 158-160)

Ans. D

103. *Symptoms of shock* include
1. rise in blood pressure.
 2. *increase in pulse rate.*
 3. *restlessness and apprehension.*
- (A) 1 only
(B) 1 and 2 only
(C) 2 and 3 only
(D) 1, 2, and 3

Shock occurs when the blood pressure is insufficient to provide adequate circulation of oxygenated blood to all body tissues.

There are several types of shock.

Symptoms common to all types of shock include a *drop in blood pressure* (and therefore an inability to provide oxygenated blood to body tissues), an *increased pulse rate*, and *restlessness and apprehension*.

(Ehrlich et al, p 239)

Ans. C

104. Which of the following blood pressure measurements indicates shock?
- (A) *Systolic pressure lower than 60 mmHg*
(B) Systolic pressure higher than 140 mmHg
(C) Diastolic pressure higher than 140 mmHg
(D) Diastolic pressure lower than 90 mmHg

Shock is indicated by extremely low blood pressure, that is, a systolic blood pressure reading lower than *60 mmHg* (below 90 mmHg is considered low blood pressure).

Normal blood pressure is *110 to 140 mmHg systolic* and *60 to 80 mmHg diastolic*.

High blood pressure is indicated by systolic pressure higher than *140 mmHg* and diastolic pressure higher than *90 mmHg*.

(Torres, p 153)

Ans. A

105. All of the following statements regarding oxygen delivery are true, except

- (A) Oxygen is classified as a drug and must be prescribed by a physician.
(B) Rate of delivery and mode of delivery must be part of a physician order for oxygen.
(C) Oxygen may be ordered continuously or as needed by the patient.
(D) *None of the above; they are all true.*

- None of the statements in the question is false; all are true.
- ❖ Oxygen is classified as a drug and must be prescribed by a physician.
- ❖ The rate and mode of delivery of oxygen must be specified in the physician's orders.
- ❖ It can be ordered to be delivered continuously or as needed.

(Adler & Carlton, pp 184-186)

Ans. D

106. The medical abbreviation meaning "three times a day" is
- (A) *tid.*
(B) qid.
(C) qh.
(D) pc.

- ❖ *Three times a day* is indicated by the abbreviation *tid.*
- ❖ The abbreviation *qid* means *four times a day*.
- ❖ *Every hour* is represented by *qh*, and *pc* means *after meals*.

(Taber's, p 2480)

Ans. A

107. Which of the following conditions must be met in order for *patient consent to be valid*?

1. *The patient must sign the consent form before receiving*

- sedation.
2. *The physician named on the consent form must perform the procedure.*
 3. *All the blanks on the consent form must be filled in before the patient signs the form.*
- (A) 1 and 2 only
(B) 1 and 3 only
(C) 2 and 3 only
(D) 1, 2, and 3
-
- ❖ All of the statements in the question are true and are necessary in order for patient consent to be valid.
- The patient must sign the consent form before receiving sedation.
 - The physician named on the consent form must perform the procedure; no other physician should perform it. Also, the consent form should be complete prior to being signed; there should be no blank spaces on the consent form when the patient signs it.
 - In the case of a minor, a parent or guardian is required to sign the form.
 - If a patient is not competent, then the legally appointed guardian should sign the consent.
 - Remember that obtaining consent is the physician's responsibility, and so the explanation of the procedural risks should be performed by the physician, not the radiographer.
- (Ehrlich, McCloskey & Daly, pp 54-56)
Ans. D
108. Which of the following conditions describes a patient who is unable to breathe easily while in the recumbent position?
- (A) Dyspnea
(B) Apnea
(C) Orthopnea
(D) Oligopnea
-
- ❖ A patient with *orthopnea* is unable to breathe while lying down.
- When the body is recumbent, the diaphragm and abdominal

- viscera move to a more superior position. It is therefore more difficult to breathe deeply.
- Patients with orthopnea must be examined in an erect or semierect position.
- ❖ *Dyspnea* refers to difficulty breathing in any body position.
- ❖ *Apnea* describes cessation of breathing for short intervals.
- ❖ *Oligopnea* is infrequent breathing as slow as 6 to 10 respirations per minute.
- (Ehrlich, McCloskey & Daly, p 127)
Ans. C
109. An *intravenous urogram* requires the patient to remain in one position for an extended period of time. What can be done to make the patient as comfortable as possible?
1. *Place a pillow under the patient's head.*
 2. *Place a support cushion under the patient's knees to relieve back strain.*
 3. Place a radiopaque pad on the entire table prior to the start of the examination.
- (A) 1 only
(B) 1 and 2 only
(C) 1 and 3 only
(D) 1, 2, and 3
-
- ❖ It is important to make the patient as comfortable as possible during lengthy radiographic examinations; as comfort increases, so does cooperation.
- Place pillows under the patient's head and knees (this reduces back strain).
- ❖ A *radiolucent pad* will increase the patient's tolerance of the uncomfortable radiographic table and will not interfere with the examination.
- (Ballinger & Frank, vol 2, p 41)
Ans. B
110. While in your care for a radiologic

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procedure, a *patient asks to see his chart*. Which of the following is the appropriate response?

- (A) Inform the patient that the chart is for health-care providers to view, not the patient.
- (B) Inform the patient that you do not know where the chart is.
- (C) *Inform the patient that he has the right to see his chart, but that he should request to view it with his physician, so that it is properly interpreted.*
- (D) Give the patient the chart and leave him alone for a few minutes to review it.

❖ **If a patient in your care asks to see his or her chart, the appropriate response is to refer the patient to his or her physician.*

- A patient does have the right to review his or her own medical record; however, the patient should do so in the presence of the physician so that the patient does not misinterpret the information and so that the physician can address concerns or answer questions.
- It is not appropriate to hand over the chart to a patient, nor is it appropriate to deceive the patient into believing that the chart is not available for viewing or that the patient has no right to review the chart.

(Adler & Carlton, p 343)

Ans. C

01094B | Patient education, safety, and comfort, Skin discoloration due to cyanosis may be observed in the

1. *gums.*
2. *nailbeds.*
3. *thorax.*

(A) 1 only

(B) 1 and 2 only

(C) 3 only

(D) 1, 2, and 3

Cyanosis is a condition resulting from a deficiency of oxygen circulating in the blood.

It is characterized by bluish *discoloration of the gums, nailbeds, and earlobes, and around the mouth.*

Cyanosis may be accompanied by labored breathing or other types of respiratory distress.

(Torres, p 137)

Ans. B

111. If *extravasation* occurs during an intravenous injection of contrast media, correct treatment includes which of the following?

1. Remove the needle and locate a sturdier vein immediately.
2. *Apply pressure to the vein until bleeding stops.*
3. *Apply warm, moist heat.*

(A) 1 only

(B) 1 and 2 only

(C) 2 and 3 only

(D) 1, 2, and 3

❖ *Extravasation* of contrast media into surrounding tissue is potentially very painful.

- If it does occur, the needle should be removed and the extravasation cared for immediately (before looking for another vein).
- *Pressure* should be applied to the vein until bleeding stops.
- Application of *warm, moist heat* to the affected area helps relieve pain.

(Adler & Carlton, p 300)

Ans. C

112. The *act of inspiration* will cause elevation of the

1. *sternum.*
2. *ribs.*
3. *diaphragm.*

(A) 1 only

(B) 1 and 2 only

(C) 2 and 3 only

(D) 1, 2, and 3

The diaphragm is the major muscle of respiration.

Upon inspiration / inhalation, the diaphragm and abdominal viscera are depressed, enabling the filling and expansion of the lungs, accompanied by upward movement of the sternum and ribs.

During expiration / exhalation, air leaves the lungs and they deflate, while the diaphragm relaxes and moves to a more superior position along with the abdominal viscera.

As the diaphragm relaxes and moves up, the sternum and ribs move inferiorly.

(Ballinger & Frank, vol 1, pp 509-510)

Ans. B

113. Ingestion of a gas-producing powder or crystals is usually preliminary to which of the following examinations?

1. Oral cholecystogram

2. Double-contrast GI

3. Intravenous urogram

(A) 1 only

(B) 2 only

(C) 1 and 2 only

(D) 2 and 3 only

❖ A double-contrast GI requires that the patient ingest gas-producing powder, crystals, pills, or beverage followed by a small amount of high-density barium.

○ The patient may then be asked to roll in the recumbent position in order to coat the gastric mucosa, while the carbon dioxide expands.

○ This procedure provides optimal visualization of the gastric walls.

❖ An oral cholecystogram can be performed approximately 3 h after ingestion of special ipodate calcium granules.

❖ An intravenous urogram (IVU) requires an IV injection of iodinated

contrast medium.

(Ballinger & Frank, vol 2, p 99)

Ans. B

114. A patient developed hives several minutes after injection of an iodinated contrast medium. What type of drug should be readily available?

(A) Analgesic

(B) Antihistamine

(C) Anti-inflammatory

(D) Antibiotic

❖ Then a contrast medium is injected, histamines are produced to protect the body from the foreign substance.

• An antihistamine such as diphenhydramine (Benadryl) blocks the action of the histamine and reduces the body's inflammatory response to the contrast medium.

• An analgesic (such as aspirin) relieves pain.

• An anti-inflammatory drug (such as ibuprofen) suppresses the inflammation of tissue.

• Antibiotics (such as penicillin) help fight bacterial infections.

(Torres, p 261)

Ans. B

115. The diameter of a needle is termed its

(A) bevel.

(B) gauge.

(C) hub.

(D) length.

❖ The diameter of a needle is the needle's gauge.

○ The higher the gauge number, the smaller the diameter and the thinner the needle.

• For example, a very tiny-gauge needle (25 gauge) may be used on a pediatric patient for an intravenous injection, whereas a large-gauge needle (16 gauge) may be used for donating blood.

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- ❖ The *hub* of a needle is the portion of the needle that attaches to a syringe.
- The *length* of the needle varies depending on its use.
- A longer needle is needed for intramuscular injections, whereas a shorter needle is used for subcutaneous injection.
- ❖ The *bevel* of the needle is the slanted tip of the needle.
- For intravenous injections, the bevel should always face up.

(Adler & Carlton, p 294)

Ans. B

116. Which of the *following parenteral routes* is *most often used for administration of contrast agents* in the radiology department?

- (A) Subcutaneous
- (B) *Intravenous*
- (C) Intramuscular
- (D) Intradermal

- ❖ A parental route of drug administration is one that bypasses the digestive system. In radiography, the *intravenous* method is most commonly used to administer contrast agents.
- ❖ The *four parenteral routes* require different needle placements: 1.) under the skin (*subcutaneous*), 2.) through the skin and into the muscle (*intramuscular*), 3.) between the layers of the skin (*intradermal*), and 4.) into the vein (*intravenous*).

(Adler & Carlton, p 300)

Ans. B

117. Which of the following exams require(s) restriction of the patient's diet?

- 1. *GI series*
- 2. Abdominal survey
- 3. *Pyelogram*

- (A) 1 only
- (B) 1 and 2 only
- (C) 1 and 3 only
- (D) 2 and 3 only

- ❖ A patient who is having a *GI series* is required to be *NPO for at least 8 h prior to the exam*; food or drink in the stomach can simulate disease.
- ❖ A patient who is scheduled for a *pyelogram* must have the *preceding meal withheld to avoid the possibility of aspirating vomitus in case of an allergic reaction*.
- ❖ An *abdominal survey* *does not require the use of contrast media*, and *no patient preparation is necessary*.

(Torres, pp 212-213)

Ans. C

118. Which of the following imaging procedures *do not require the use of ionizing radiation to produce an image*?

- 1. *Ultrasound*
- 2. Computed axial tomography
- 3. *Magnetic resonance imaging*

(A) 1 and 2 only

(B) *1 and 3 only*

(C) 2 and 3 only

(D) 1, 2, and 3

- ❖ Both *ultrasound* and *magnetic resonance imaging* *do not require the use of ionizing radiation to produce an image*.
- *Computed axial tomography* does require ionizing radiation to produce an image.
- *Ultrasound* requires the *use of high-frequency sound waves to produce images* of soft tissue structures and certain blood vessels within the body.
- *Magnetic resonance imaging* relies on the *use of a very powerful magnet and specially designed coils that are sensitive to radio-wave signals to produce the image*.

(Torres, pp 310, 313)

Ans. B

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119. You receive an ambulatory patient for a GI series. As the patient is seated on the x-ray table, he feels faint. You should

1. Lay the patient down on the x-ray table.
2. Elevate the patient's legs or place the table slightly Trendelenburg.
3. Leave quickly and call for help.

(A) 1 only

(B) 1 and 2 only

(C) 1 and 3 only

(D) 1, 2, and 3

A patient who has been NPO since midnight or who is anxious, frightened, or in pain may suffer an episode of *syncope* (fainting) on exertion.

The patient should be helped to a recumbent position with feet elevated, in order to increase blood flow to the head.

A patient who feels faint should never be left alone.

(Adler & Carlton, pp 274-275)

Ans. B

120. Examples of COPD include

1. bronchitis.
2. pulmonary emphysema.
3. asthma.

(A) 1 only

(B) 1 and 2 only

(C) 2 and 3 only

(D) 1, 2, and 3

-
- ❖ COPD is the abbreviation for chronic obstructive pulmonary disease; it refers to a group of disorders, including bronchitis, emphysema, asthma, and bronchiectasis.

- COPD is irreversible and decreases the ability of the lungs to perform their ventilation functions.

- There is often less than half the normal expected maximal breathing capacity.

(Taber's, p 608)

Ans. D

121. If an emergency trauma patient experiences hemorrhaging from a leg injury, the radiographer should

1. apply pressure to the bleeding site.
2. call the emergency department for assistance.
3. apply a pressure bandage and complete the examination.

(A) 1 and 2 only

(B) 1 and 3 only

(C) 2 and 3 only

(D) 1, 2, and 3

-
- ❖ It is unlikely that the radiographer will be faced with a wound hemorrhage, because bleeding from wounds is controlled before the patient is seen for x-ray examination.

- However, if a patient does experience hemorrhaging from a wound, you should apply pressure to the bleeding site and call for assistance.

- Delay can lead to serious blood loss.

(Adler & Carlton, p 275)

Ans. A

122. A patient who is diaphoretic has

(A) pale, cool, clammy skin.

(B) hot, dry skin.

(C) dilated pupils.

(D) warm, moist skin.

-
- ❖ Observation is an important part of the evaluation of acutely ill patients.

- ❖ The patient who is *diaphoretic* is "in a cold sweat," with pale, cool, moist skin.

- Hot, dry skin accompanies fever.

- ❖ Warm, moist skin may be a result of anxiety or simply of being in a warm room.

- The pupils dilate in dimly illuminated places in order to allow more light into the eyes.

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(Ehrlich, McCloskey & Daly, p 120)

Ans. A

123. When disposing of contaminated needles, they are placed in a special container using what procedure?

- (A) Recap the needle, remove the syringe, and dispose of the needle.
- (B) Do not recap the needle, remove the syringe, and dispose of the needle.
- (C) Recap the needle and dispose of the entire syringe.
- (D) Do not recap the needle and dispose of the entire syringe.

-
- ❖ Most needle sticks occur during attempts to recap a needle.
 - Proper disposal of contaminated needles and syringes is becoming more vital as HIV, AIDS, and HBV reach epidemic proportions.
 - To prevent the spread of any possible infection, handle contaminated materials as little as possible.
 - Therefore, do not attempt to recap a needle; instead, dispose of the entire syringe with the needle attached in the special container that is available.

(Torres, p 279)

Ans. D

124. A radiologic technologist can be found guilty of a tort in which of the following situations?

- 1. Failure to shield a patient of childbearing age from unnecessary radiation
- 2. Performing an examination on a patient who has refused the examination
- 3. Discussing a patient's condition with a third party

- (A) 1 only
- (B) 1 and 2 only
- (C) 2 and 3 only
- (D) 1, 2, and 3

-
- ❖ A tort is an intentional or unintentional act that involves personal injury or damage to a patient.
 - Allowing a patient to be exposed to unnecessary radiation, either by neglecting to shield the patient or by performing an unwanted, examination, would be considered a tort, and the radiographer would be legally accountable.
 - Discussing a patient's condition with a third party would undoubtedly be considered a serious intentional tort.

(Torres, p 12)

Ans. D

125. When radiographing young children, it is helpful to

- 1. let them bring a toy.
- 2. tell them it will not hurt.
- 3. be cheerful and unhurried.

(A) 1 only

(B) 1 and 3 only

(C) 2 and 3 only

(D) 1, 2, and 3

-
- ❖ Children are often fearful of leaving familiar surroundings, and being able to take along a familiar toy is helpful.
 - ❖ A calm and cheerful radiographer can be reassuring to the anxious child.
 - ❖ Honesty is essential, and false reassurances, such as telling the child it will not hurt, not only do more harm than good, but also focus the child's attention on pain.

(Ehrlich et al, p 71)

Ans. B

126. Chest drainage systems should always be kept

- (A) above the patient's chest.
- (B) at the level of the patient's chest.
- (C) below the level of the patient's

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chest.

- (D) none of the above; the position of the chest drainage system is not important.

-
- ❖ The chest drainage system unit should *always be kept below the level of the patient's chest.*
 - Chest tubes are used to remove air, blood, or fluid from the pleural cavity.
 - By draining fluid from the pleural cavity, a collapsed lung, or *atelectasis*, may be relieved.
 - By relieving the pressure from air in the pleural cavity, a *pneumothorax* may be reduced.
 - Radiographers must take care that the tubes of the chest drainage unit do not kink and do not get caught on intravenous poles or radiographic equipment.
 - It is imperative that the unit remain below the level of the chest.
 - ❖ The chest drainage system has several components.
 - One component is a chamber that collects the draining fluid.
 - Another component is the suction control chamber.
 - A third component is the water seal chamber, which prevents air from the atmosphere from entering the system.
 - The last component is the water seal venting chamber, which allows air to leave the system, thus preventing pressure buildup.
 - In order for the unit to work properly, it must remain below the level of the chest.

(Adler & Carlton, p 236)

Ans. C

127. With a *patient suffering abdominal pain*, it is frequently helpful to
1. *elevate the head slightly with a pillow.*
 2. perform the exam in the

Trendelenburg position.

3. *place a support under the knees.*
- (A) 1 and 2 only
(B) *1 and 3 only*
(C) 2 and 3 only
(D) 1, 2, and 3

Strain on the abdominal muscles may be minimized by placing a pillow under the patient's head and a support under the patient's knees.

The pillow also relieves neck strain, reduces the chance of aspiration in the nauseated patient, and allows the patient to observe his or her surroundings.

The Trendelenburg position causes the diaphragm to assume a higher position and can cause a patient to become short of breath.

(Ehrlich, McCloskey & Daly, pp 93-94)

Ans. B

128. If the radiographer performed a lumbar spine examination on a patient who was supposed to have an elbow exam, which of the following charges may be brought against the radiographer?

- (A) Assault
(B) *Battery*
(C) False imprisonment
(D) Defamation

❖ A radiographer who performs the wrong examination on a patient may be charged with battery.

- Battery refers to the unlawful laying of hands on a patient. The radiographer could also be charged with battery if a patient was moved about roughly or touched in a manner that is inappropriate or without the patient's consent.
- Assault is the threat of touching or laying hands on someone.
 - If a patient feels threatened by a practitioner, either because of the tone or pitch of the practitioner's voice or because

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the practitioner uses words that are threatening, the practitioner can be accused of assault.

- False imprisonment may be considered if a patient is ignored after stating that she no longer wishes to continue with the procedure, or if restraining devices are improperly used or used without a physician's order.
- The accusation of defamation can be upheld when patient confidentiality is not respected, and as a result the patient suffers embarrassment or mockery.

(Ehrlich et al, p 57)

Ans. B

129. Which ethical principle is related to the theory that patients have the right to decide what will or will not be done to them?

- (A) Autonomy
- (B) Beneficence
- (C) Fidelity
- (D) Veracity

-
- Autonomy is the ethical principle that is related to the theory that patients have the right to decide what will or will not be done to them.
 - Beneficence is related to the idea of doing good and being kind.
 - Fidelity is faithfulness and loyalty.
 - Veracity is not only telling the truth, but also not practicing deception.

(Adler & Carlton, p 341)

Ans. A

130. The mechanical device used to correct an ineffectual cardiac rhythm is a

- (A) defibrillator.
- (B) cardiac monitor.
- (C) crash cart.
- (D) resuscitation bag.

-
- ❖ The mechanical device used to

correct an ineffectual cardiac ventricular rhythm is a defibrillator.

- The two paddles attached to the unit are placed on a patient's chest and used to introduce an electric current in an effort to correct the dysrhythmia.
- Automatic Implantable Cardioverter Defibrillators (AICD) are fairly new devices that are implanted in the body and which deliver a small shock to the heart if a life-threatening dysrhythmia occurs.
- A cardiac monitor is used to display, and sometime record, electrocardiogram (ECG) readings and some pressure readings.
- The crash cart is a supply cart with various medications and equipment necessary for treating a patient who is suffering from a myocardial infarction or some other serious medical emergency.
- It is periodically checked and restocked.
- A resuscitation bag is used for ventilation, as during cardiopulmonary resuscitation.

(Tortora & Grabowski, p 691)

Ans. A

131. According to the Centers for Disease Control and Prevention (CDC), which of the following body fluids should be treated as if they contained pathogenic microorganisms?

1. Any fluid containing blood
2. Cerebrospinal fluid
3. Synovial fluid

- (A) 1 only
- (B) 1 and 2 only
- (C) 2 and 3 only
- (D) 1, 2, and 3

The CDC has issued recommendations for handling blood and other body fluids for the protection of health-care

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workers.

According to the CDC, all human blood and certain human body fluids must be treated as though they harbored pathogenic microorganisms.

This describes *Standard Precautions*.

- The body fluids identified by the CDC are as follows:

Blood and/or any fluid containing blood

Amniotic fluid

Cerebrospinal fluid

Pericardial fluid

Pleural fluid

Saliva from dental procedures

Seminal fluid Synovial fluid Vaginal

fluid Any unidentifiable body fluid

(Torres, p 51)

Ans. D

132. Which of the following is (are) symptom(s) of *shock*?

1. *Pallor and weakness*

2. *Increased pulse rate*

3. Fever

(A) 1 only

(B) *1 and 2 only*

(C) 1 and 3 only

(D) 1, 2, and 3

- ❖ A patient who is going into shock may exhibit *pallor* and *weakness*, a significant *drop in blood pressure*, and an *increased pulse rate*.

- The patient may also experience *apprehension* and *restlessness* and may have cool, clammy skin.

- ❖ A radiographer recognizing these symptoms should call them to the physician's attention immediately.

- Fever is not associated with shock.

(Ehrlich et al, p 239)

Ans. B

133. Pulmonary fibrosis can result from the inhalation of dust particles; this is characteristic of

(A) cystic fibrosis.

(B) chronic asthma.

(C) *pneumoconiosis*.

(D) pleural effusion.

- ❖ *Pneumoconiosis* is a condition of the respiratory tract caused by the occupational inhalation of dust particles and resulting in pulmonary fibrosis.

- ❖ *Silicosis* is a serious type of pneumoconiosis.

- ❖ High-risk occupations for pneumoconiosis are mining and stonecutting.

- ❖ *Asthma* is a kind of COPD.

- ❖ *Pleural effusion* is characterized by a collection of fluid in the pleural cavity and is usually a manifestation of serious underlying disease.

- ❖ *Cystic fibrosis* is a hereditary disorder that affects the function of not only the lungs, but also many exocrine glands.

(Carlton & Adler, p 258)

Ans. C

134. A quantity of medication introduced intravenously over a period of time is termed

(A) an intravenous push.

(B) *an infusion*.

(C) a bolus.

(D) parenteral.

Quantities of medication can be dispensed intravenously over a period of time via an IV infusion.

A special infusion pump may be used to precisely regulate the quantity received by the patient.

An intravenous push refers to a rapid injection; the term bolus refers to the quantity of material being injected.

The term parenteral refers to administration of medication by any route other than orally.

(Adler & Carlton, pp 301-302)

Ans. B

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135. Symptoms associated with a respiratory reaction to contrast media include

1. sneezing.
2. dyspnea.
3. asthma attack.

- (A) 1 and 2 only
(B) 1 and 3 only
(C) 2 and 3 only
(D) 1, 2, and 3

All of these symptoms are related to a respiratory reaction.

There may also be hoarseness, wheezing, or cyanosis.

The patient who has received contrast media should be watched closely. If any symptoms arise, the radiologist should be notified immediately.

(Adler & Carlton, p 328)

Ans. D

136. All drug packages must provide certain information required by the U.S. Food and Drug Administration. Some of the information that must be provided includes

1. the generic name.
2. contraindications.
3. the usual dose.

- (A) 1 only
(B) 1 and 2 only
(C) 1 and 3 only
(D) 1, 2, and 3

- ❖ The U.S. Food and Drug Administration mandates that certain information be included in every drug package.

- o Some of the information that drug companies are required to provide is trade and generic names, indications and contraindications, usual dose, chemical composition and strength, and any reported side effects.

(Ehrlich, McCloskey & Daly, p 184)

Ans. D

137. The medical term for congenital

clubfoot is

- (A) coxa plana.
(B) osteochondritis.
(C) talipes.
(D) muscular dystrophy.

- ❖ Talipes is the term used to describe congenital clubfoot.

- There are several types of talipes, generally characterized by a deformed talus and a shortened Achilles tendon, giving the foot a clubfoot appearance.

- ❖ Osteochondritis (Osgood-Schlatter disease) is a painful incomplete separation of the tibial tuberosity from the tibial shaft.

- It is often seen in active adolescent boys.

- ❖ Coxa plana (Legg-Calv.-Perthes disease) is ischemic necrosis leading to flattening of the femoral head.

- ❖ Muscular dystrophy is a congenital disorder characterized by wasting of skeletal muscles.

(Ballinger & Frank, vol 1, p 259)

Ans. C

138. When a GI series has been requested on a patient with a suspected perforated ulcer, the type of contrast medium that should be used is

- (A) thin barium sulfate suspension.
(B) thick barium sulfate suspension.
(C) water-soluble iodinated media.
(D) oil-based iodinated media.

- ❖ Whenever a perforation of the GI tract is suspected, a water-soluble contrast agent (such as Gastrografin or oral Hypaque) should be used because it is easily absorbed from within the peritoneal cavity.

- o Leakage of barium sulfate into the peritoneal cavity can have serious consequences.

- ❖ Water-soluble contrast agents may also be used in place of barium sulfate when the possibility of barium impaction exists.
- o Oil based contrast agents are

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rarely used today.
(Ballinger & Frank, vol 2, p 94)
Ans. C

139. Where is the "*sterile corridor*" located?

- (A) Just outside the surgical suite
- (B) Immediately inside each operating room door
- (C) *Between the draped patient and the instrument table*
- (D) At the foot end of the draped patient

-
- ❖ When radiographs in the surgical suite are required, the radiographer is responsible for ensuring that surgical asepsis is maintained.
 - This requires proper dress, cleanliness of equipment, and restricted access to certain areas.
 - An example of a restricted area is the "*sterile corridor*," which is located between the draped patient and the instrument table and is occupied only by the surgeon and the instrument nurse.

(Ehrlich, McCloskey & Daly, p 171)
Ans. C

140. Of the *four stages of infection*, which is the stage during which the infection is most communicable?

- (A) Latent period
- (B) Incubation period
- (C) *Disease phase*
- (D) Convalescent phase

-
- ❖ Of the *four stages of infection*, the stage during which the infection is most communicable is the *disease phase*.
 - In the initial phase, ^{1.)} the *latent period*, the infection is introduced and lies dormant.
 - ❖ As soon as the microbes begin to shed, the infection becomes communicable.

- The microbes reproduce (^{2.)} during the *incubation period*, and ^{3.)} during the actual *disease period*, signs and symptoms of the infection may begin.
- The infection is most active and communicable at this point.
- As the patient fights off the infection, and the symptoms regress, ^{4.)} the *convalescent* (recovery) phase occurs.

(Torres, p 47)
Ans. C

141. Examples of *nasogastric tubes* include

- 1. Swan-Ganz.
- 2. *Salem-sump*.
- 3. *Levin*.

- (A) 1 and 2 only
- (B) 1 and 3 only
- (C) *2 and 3 only*
- (D) 1, 2, and 3

-
- ❖ The *Levin* and *Salem-sump* tubes are *nasogastric* (NG) *tubes used for gastric decompression*.
 - 1.) The *Salem-sump* tube is radiopaque and has a double lumen.
 - One lumen is for gastric air compression, and the other is for removal of fluids.
 - 2.) The *Levin* tube is a single-lumen tube that is used to prevent accumulation of intestinal liquids and gas during and following intestinal surgery.
 - ❖ The *Swan-Ganz intravenous catheter* is advanced to the pulmonary artery and used to measure various heart pressures.

(Adler & Carlton, p 246)
Ans. C

142. Guidelines for cleaning contaminated objects or surfaces include

- 1. *Clean from the most contaminated to the least contaminated area*

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2. Clean in a circular motion, starting from the center and working outward

3. Clean from the top down

- (A) 1 only
(B) 1 and 2 only
(C) 1 and 3 only
(D) 1, 2, and 3

❖ Because hospitals are the refuge of the sick, they can also be places of disease transmission unless proper infection control guidelines are followed.

- When cleaning contaminated objects or surfaces such as the radiographic table, it is important to clean from the most contaminated to the least contaminated area and from the top down.

- Soiled gowns and linens should be folded from the outside in and properly disposed of.

❖ When the patient's skin is being prepared for surgery, it is often cleaned in circular motion, starting from the center and working outward; however, this motion is not used for objects or surfaces.

(Torres, p 58)

Ans. C

143. In classifying intravenous contrast agents, the total number of dissolved particles in solution per kilogram of water defines

- (A) osmolality.
(B) toxicity.
(C) viscosity.
(D) miscibility.

- a) In classifying contrast agents, the total number of dissolved particles in solution per kilogram of water defines the osmolality of the contrast agent.

- b) The toxicity defines how noxious or harmful a contrast agent is.

- Contrast agents with low osmolality have been found to

cause less tissue toxicity than the ionic intravenous contrast agents.

- c) The viscosity defines the thickness or concentration of the contrast agent.

- The viscosity of a contrast agent can affect the injection rate.

- A thicker, or more viscous, contrast agent will be more difficult to inject (more pressure is needed to push the contrast agent through the syringe and needle or the angiocatheter).

- d) The miscibility of a contrast agent refers to its ability to mix with body fluids, such as blood.

- Miscibility is an important consideration in preventing thrombosis formation.

It is generally preferable to use a contrast agent with low osmolality and low toxicity because such an agent is safer for the patient and less likely to cause any untoward reactions.

When ionic and nonionic contrast agents are compared, a nonionic contrast agent has a lower osmolality.

To further understand osmolality, remember that whenever intravenous contrast media are introduced, there is a notable shift in fluid and ions.

This shift is caused by an inflow of water from interstitial regions into the vascular compartment, which increases the blood volume and cardiac output.

Consequently, there will be a decrease in systemic arterial pressure and peripheral vascular resistance with peripheral vasodilation.

Additionally, the pulmonary pressure and heart rate increase.

When the effects of osmolality on the patient are understood, it becomes clear that an elderly patient or one with cardiac disease or impaired circulation would greatly benefit from the use of an agent with lower osmolality.

(Adler & Carlton, p 320)

Ans. A

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144. Which of the following drugs is considered a bronchodilator?

- (A) Epinephrine
- (B) Lidocaine
- (C) Nitroglycerin
- (D) Verapamil

-
- ❖ Epinephrine (Adrenalin) is a bronchodilator.
 - Bronchodilators may be administered in a spray mister, such as for asthma, or by injection to relieve severe bronchospasm.
 - ❖ Lidocaine (Xylocaine) is an antiarrhythmic used to prevent or treat cardiac arrhythmias (dysrhythmia).
 - ❖ Nitroglycerin and verapamil are vasodilators.
 - Vasodilators permit increased blood flow by relaxing the walls of the blood vessels.

(Adler & Carlton, p 291)

Ans. A

145. Symptoms of impending diabetic coma include

1. increased urination.
2. sweet-smelling breath.
3. extreme thirst.

- (A) 1 and 2 only
- (B) 1 and 3 only
- (C) 2 and 3 only
- (D) 1, 2, and 3

-
- ❖ When a diabetic patient misses an insulin injection, the body loses its ability to metabolize glucose, and ketoacidosis can occur.
 - If this is not quickly corrected, the patient may become comatose.
 - Symptoms of impending coma include increased urination, sweet (fruity) breath, and extreme thirst.
 - Other symptoms are weakness and nausea.

(Torres, p 159)

Ans. D

146. Lyme disease is caused by bacteria carried by deer ticks. The tick bite may cause fever, fatigue, and other associated symptoms. This is an example of transmission of an infection by

- (A) droplet contact.
- (B) a vehicle.
- (C) the airborne route.
- (D) a vector.

-
- ❖ Lyme disease is a condition that results from the transmission of an infection by a vector (in this case, a deer tick).
 - ❖ Vectors are insects and animals carrying disease.
 - ❖ Droplet contact involves contact with secretions (from the nose, mouth, or eye) that travel via a sneeze or cough.
 - ❖ The Airborne route involves evaporated droplets in the air that transfer disease.

A Vehicle can transmit infection via contaminated water, food, blood, or drugs.

(Torres, p 46)

147. Ans. D

148. Which of the following patient rights is violated by discussing privileged patient information with an individual who is not involved with the patient's care?

- 1. The right to considerate and respectful care
 - 2. The right to privacy
 - 3. The right to continuity of care
- (A) 1 only
 - (B) 2 only
 - (C) 1 and 3 only
 - (D) 2 and 3 only

-
- ❖ The patient's right to privacy refers to the patient's modesty and dignity being respected.
 - It also refers to the professional health-care worker's obligation to respect the confidentiality of

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privileged information.

- o Communication of privileged information to anyone but health-care workers involved with the patient's care is inexcusable.

(Gurley & Callaway, p 187)

Ans. B

149. The condition in which *pulmonary alveoli lose their elasticity* and become permanently inflated, causing the patient to consciously exhale, is

(A) bronchial asthma.

(B) bronchitis.

(C) *emphysema*.

(D) tuberculosis.

- ❖ *Emphysema* is a progressive disorder caused by long-term irritation of the bronchial passages, such as by air pollution or cigarette smoking.

- *Emphysema* patients are unable to exhale normally because of the *loss of elasticity of alveolar walls*.

- o If emphysema patients receive oxygen, it is usually administered at a very slow heart rate, because their respirations are controlled by the level of carbon dioxide in the blood.

(Tortora & Grabowski, p 844)

Ans. C

150. *Blood pressure* is measured in units of (A) *mmHg*.

(B) beats per minute.

(C) °F.

(D) L/min.

- ❖ *Blood pressure* is measured in millimeters of mercury, or mmHg.

- ❖ *Heart rate*, or pulse, is measured in units of beats per minute.

- ❖ *Temperature* is measured in degrees Fahrenheit, or °F.

- ❖ *Oxygen* delivery is measured in units of liters per minute, or L/min.

Table 1-1 outlines the normal ranges for

vital signs in healthy adults.

(Torres, p 137)

TABLE 1-1. NORMAL RANGES FOR VITAL SIGNS IN ADULTS

Blood Pressure	110-140 mm Hg/
	60-90 mm Hg
Pulse	60-100 beats per minute
Temperature	97.7-99.5°F
Respiration	12-20 breaths per minute

Ans. A